United States Department of Agriculture

Dietary Patterns before and during Pregnancy and Risk of Gestational Diabetes Mellitus: A Systematic Review

The Pregnancy and Birth to 24 Months Project

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Nutrition Evidence Systematic Review
Center for Nutrition Policy and Promotion
Food and Nutrition Service
U.S. Department of Agriculture
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This systematic review was conducted for the Pregnancy and Birth to 24 Months Project (P/B-24 Project) by the Nutrition Evidence Systematic Review (NESR) team at the Center for Nutrition Policy and Promotion, Food and Nutrition Service, USDA. All systematic reviews from the P/B-24 Project are available on the NESR website: https://nesr.usda.gov.

Conclusion statements drawn as part of this systematic review describe the state of science related to the specific question examined. Conclusion statements do not draw implications, and should not be interpreted as dietary guidance.

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This systematic review has also been published in the *American Journal of Clinical Nutrition*:
Raghavan R, Dreibelbis C, Kingshipp BL, Wong YP, Abrams B, Gernand AD, et al. Dietary patterns before and during pregnancy and maternal outcomes: a systematic review. *Am J Clin Nutr*. 2019;109(7):705S–28S. doi: 10.1093/ajcn/nqy216

Related citations are published in the *American Journal of Clinical Nutrition*:
- **P/B-24 Project overview:** Stoody EE, Spahn JM, Casavale KO. The Pregnancy and Birth to 24 Months Project: a series of systematic reviews on diet and health. *Am J Clin Nutr*. 2019;109(7):685S–97S. doi: 10.1093/ajcn/nqy372.
- **P/B-24 systematic review methodology:** Obbagy JE, Spahn JM, Wong YP, Psota TL, Spill MK, Dreibelbis C, et al. Systematic review methodology used in the Pregnancy and Birth to 24 Months Project. *Am J Clin Nutr*. 2019;109(7):698S–704S. doi: 10.1093/ajcn/nqy226
- **Related systematic reviews from the P/B-24 Project:** Raghavan R, Dreibelbis C, Kingshipp BL, Wong YP, Abrams B, Gernand AD, et al. Dietary patterns before and during pregnancy and birth outcomes: a systematic review. *Am J Clin Nutr*. 2019;109(7):729S–56S. doi: 10.1093/ajcn/nqy353

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All TEC and NESR team members, Project leads, and FEG-TEC liaisons participated in establishing the research questions, analytic framework, and study inclusion and exclusion criteria. RR, CD, and YPW developed and conducted the literature search. RR, CD, and BLK screened search results, identified studies for inclusion, extracted data, and assessed risk of bias for included studies. BA, AB, LMB, AG, KR, AMSR, JSS, EES, JMS, and KOC reviewed and provided substantive feedback on all systematic review materials, including the synthesis of the body of evidence, conclusion statement, and grade of the strength of the evidence. RR prepared this report and EES, JMS, and KOC provided oversight. All authors critically reviewed and approved the final report. The authors declare no conflicts of interest.

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INTRODUCTION

This document describes a systematic review conducted to answer the following question: What is the relationship between dietary patterns before and during pregnancy and risk of gestational diabetes mellitus? This systematic review was conducted as part of the Pregnancy and Birth to 24 Months (P/B-24) Project by USDA's Nutrition Evidence Systematic Review (NESR).

The purpose of the P/B-24 Project was to conduct a series of systematic reviews on diet and health for women who are pregnant and for infants and toddlers from birth to 24 months of age. This project was a joint initiative led by USDA and HHS, and USDA's NESR carried out all of the systematic reviews. A Federal Expert Group (FEG), a broadly representative group of Federal researchers and program leaders, also provided input throughout the P/B-24 Project. More information about the P/B-24 Project has been published[ii] and is available on the NESR website: https://nesr.usda.gov/project-specific-overview-pb-24-0.

NESR, formerly known as the Nutrition Evidence Library (NEL), specializes in conducting food- and nutrition-related systematic reviews using a rigorous, protocol-driven methodology. To conduct each P/B-24 systematic review, NESR's staff worked with a Technical Expert Collaborative (TEC), which is a group of 7–8 leading subject matter experts.

NESR's systematic review methodology involves developing and prioritizing systematic review questions, searching for and selecting studies, extracting and assessing the risk of bias of data from each included study, synthesizing the evidence, developing a conclusion statement, grading the evidence underlying the conclusion statement, and recommending future research. A detailed description of the methodology used in conducting systematic reviews for the P/B-24 Project has been published[iii] and is available on the NESR website: https://nesr.usda.gov/pb-24-project-methodology-0. In addition, starting on page 49, this document includes details about the methodology as it was applied to the systematic review described herein. An analytic framework that illustrates the overall scope of the question, including the population, the interventions and/or exposures, comparators, and outcomes of interest, is found on page 49. In addition, the literature search plan that was used to identify studies included in this systematic review is found on page 50.

[ii] Stoody EE, Spahn JM, Casavale KO. The Pregnancy and Birth to 24 Months Project: a series of systematic reviews on diet and health. *Am J Clin Nutr*. 2019;109(7):685S–97S. doi: 10.1093/ajcn/nqy372.
[iii] Obbagy JE, Spahn JM, Wong YP, Psota TL, Spill MK, Dreibelbis C, et al. Systematic review methodology used in the Pregnancy and Birth to 24 Months Project. *Am J Clin Nutr*. 2019;109(7):698S–704S. doi: 10.1093/ajcn/nqy226.

List of abbreviations

Abbreviation	Full name
FEG	Federal Expert Group
HHS	Department of Health and Human Services
NEL	Nutrition Evidence Library
NESR	Nutrition Evidence Systematic Review
P/B-24	Pregnancy and Birth to 24 Months Project
TEC	Technical Expert Collaborative
USDA	United States Department of Agriculture

WHAT IS THE RELATIONSHIP BETWEEN DIETARY PATTERNS BEFORE AND DURING PREGNANCY AND RISK OF GESTATIONAL DIABETES MELLITUS?

PLAIN LANGUAGE SUMMARY

What is the question?

- The question is: What is the relationship between dietary patterns before and during pregnancy and risk of gestational diabetes mellitus?

What is the answer to the question?

- Limited but consistent evidence suggests that certain dietary patterns before pregnancy are associated with a reduced risk of gestational diabetes mellitus. These protective dietary patterns are:
  - higher in vegetables, fruits, whole grains, nuts, legumes, and fish, and
  - lower in red and processed meats.
- Most of the research was conducted in healthy, Caucasian women with access to health care.
- Evidence is insufficient to estimate the association between dietary patterns during pregnancy and risk of gestational diabetes mellitus.

Why was this question asked?

- This important public health question was identified and prioritized as part of the U.S. Department of Agriculture and Department of Health and Human Services Pregnancy and Birth to 24 Months Project.

How was this question answered?

- A team of Nutrition Evidence Systematic Review staff conducted a systematic review in collaboration with a group of experts called a Technical Expert Collaborative.

What is the population of interest?

- Women who are pregnant or able to become pregnant, ages 15-44 years.

What evidence was found?

- This review includes 11 studies that were published since 1980. Some studies were small, including 12 participants, while others were really large and included 15,254 participants. Most of these women were Caucasians that had access to health care. The extent of overweight and obesity varied. In some studies 1 in 10 women were overweight or obese, while in others 1 in 3 were overweight or obese.
- Studies used different approaches to develop dietary patterns:
  - 5 studies used an existing index or score.
  - 4 studies used data-driven methods such as principal components analysis.
  - 1 study used both an index/score and a data-driven method.
  - The randomized controlled trial used an experimental diet.

- Studies showed that what women ate several years (2-10 y) before pregnancy was important for gestational diabetes risk.
- However, what women ate during pregnancy did not increase or decrease the gestational diabetes risk.

How up-to-date is this review?

- This review includes literature from 01/1980 to 01/2017.

TECHNICAL ABSTRACT

Background

- This systematic review was conducted as part of the U.S. Department of Agriculture and Department of Health and Human Services Pregnancy and Birth to 24 Months Project.
- The goal of this systematic review was to examine the following question: What is the relationship between dietary patterns before and during pregnancy and risk of gestational diabetes mellitus?

Conclusion Statement and Grades

- Limited but consistent evidence suggests that certain dietary patterns before pregnancy are associated with a reduced risk of gestational diabetes mellitus. These protective dietary patterns are:
  - higher in vegetables, fruits, whole grains, nuts, legumes, and fish, and
  - lower in red and processed meats.
- Most of the research was conducted in healthy, Caucasian women with access to health care.

Grade: Limited

- Evidence is insufficient to estimate the association between dietary patterns during pregnancy and risk of gestational diabetes mellitus.

Grade: Grade not assignable

Methods

- The systematic review was conducted by a team of staff from the Nutrition Evidence Systematic Review in collaboration with a Technical Expert Collaborative.
- Literature searches were conducted using PubMed, Embase, Cochrane, and other databases to identify studies that evaluated the relationship between dietary patterns before and during pregnancy and risk of gestational diabetes mellitus. A manual search was conducted to identify articles that may not have been included in the electronic databases searched. Articles were screened by two authors independently for inclusion based on pre-determined criteria. Those that met the following criteria were included in the review: randomized controlled trials (RCTs), prospective or retrospective cohort studies or nested case-control studies; studies enrolling human subjects who were pregnant women or women capable of becoming pregnant, healthy or at elevated chronic disease risk (only some, not all, could have a chronic or pregnancy-related condition), and between the ages of 15 and 44; subjects from countries with high or very high human development (2015 Human Development Index); and studies published in English in peer-reviewed journals.
- The date range was from January 1980 to January 2017. The intervention or exposure was dietary patterns before or during pregnancy measured via indices and scores, cluster or factor analysis, reduced rank regression, or other methods. The outcome was risk of GDM and related intermediate outcomes (glucose intolerance, insulin resistance, HbA1C, HOMA-IR, fasting blood glucose, and oral glucose tolerance test).

- Data from each included article were extracted, risks of bias were assessed, and both were checked for accuracy. The body of evidence was qualitatively synthesized, a conclusion statement was developed, and the strength of the evidence (grade) was assessed using pre-established criteria including evaluation of the internal validity/risk of bias, adequacy, consistency, impact, and generalizability of available evidence.

Summary of Evidence

- This systematic review includes 10 prospective cohort studies and 1 pilot RCT, published between 1998 and 2016.
- The studies used multiple approaches to assess dietary patterns. Five studies used indices/scores to assess dietary patterns, four studies used factor or principal component analysis (PCA) and one study used both an index/score and PCA. In addition, one RCT assigned subjects to one of two experimental diets.
- Overall, 8 of the 11 included studies found statistically significant associations between dietary patterns and GDM risk among healthy Caucasian women with access to health care. Greater adherence to a protective dietary pattern before and during pregnancy was associated with a decrease in GDM risk of 24% to 56%. Higher adherence to a detrimental pattern was associated with an increase in risk of 23% to 63%.
- There is heterogeneity in terms of when dietary data were assessed. Five studies measured diet before pregnancy while the rest (n=6) assessed diet during pregnancy.
    - Greater adherence to a healthy diet assessed 2-10 years before pregnancy showed a consistent inverse association with the risk of GDM in all the studies. These findings are also in agreement with the evidence linking dietary patterns and type 2 diabetes mellitus risk in non-pregnant populations.
    - There were mixed findings in studies that assessed diet during pregnancy: 1) three studies showed an association with GDM, 2) one showed an inverse association with blood glucose, only, and not with GDM, 3) one showed an effect on blood glucose and insulin response but did not study GDM, and 4) one other study showed no association with GDM.
- Generalizability of the studies is limited to healthy Caucasian women who have access to health care. Minority women and those of lower SES are underrepresented in this body of evidence.

FULL REVIEW

Systematic review question

What is the relationship between dietary patterns before and during pregnancy and risk of gestational diabetes mellitus?

Conclusion statement

Limited but consistent evidence suggests that certain dietary patterns before pregnancy are associated with a reduced risk of gestational diabetes mellitus. These protective dietary patterns are:

- higher in vegetables, fruits, whole grains, nuts, legumes, and fish, and
- lower in red and processed meats.

Most of the research was conducted in healthy, Caucasian women with access to health care.

Grade

Limited

Conclusion statement

Evidence is insufficient to estimate the association between dietary patterns during pregnancy and risk of gestational diabetes mellitus.

Grade

Grade not assignable

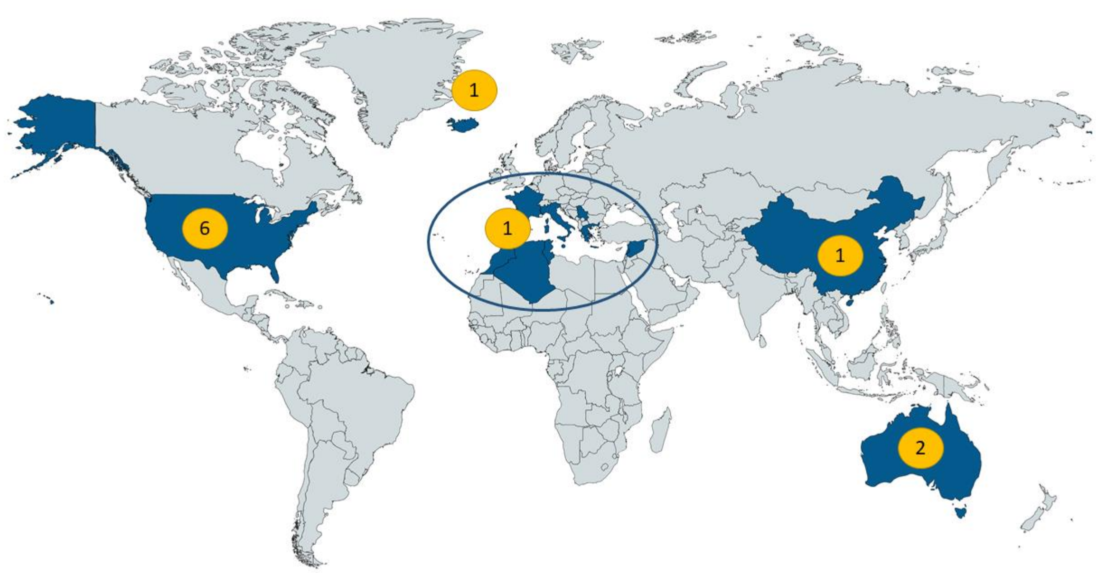
Summary

- This systematic review includes 10 prospective cohort studies and 1 pilot randomized controlled trial (RCT), published between 1998 and 2016.
- The studies used multiple approaches to assess dietary patterns. Five studies used indices/scores to assess dietary patterns, four studies used factor or principal component analysis (PCA) and one study used both an index/score and PCA. In addition, one RCT assigned subjects to one of two experimental diets.
- Overall, 8 of the 11 included studies found statistically significant associations between dietary patterns and GDM risk among healthy Caucasian women with access to health care. Greater adherence to a protective dietary pattern before and during pregnancy was inversely associated with a decrease in GDM risk of 24% to 56%. Higher adherence to a detrimental pattern was positively associated with an increase in risk of 23% to 63%.
- There is heterogeneity in terms of when dietary data were assessed. Five studies measured diet before pregnancy while the rest (n=6) assessed diet during pregnancy.
    - Greater adherence to a healthy diet assessed 2-10 years before pregnancy showed a consistent inverse association with the risk of gestational diabetes mellitus (GDM) in all five studies. These findings were also in agreement with the evidence linking dietary patterns and diabetes mellitus risk in non-pregnant populations.

- There were mixed findings in studies that assessed diet during pregnancy: three studies showed an association with GDM, one showed an inverse association only with blood glucose and not with GDM, one showed an effect on blood glucose and insulin response but did not study GDM, and one other study showed no association.
- Generalizability of the studies is limited to healthy Caucasian women who have access to health care. Minority women and those of lower SES are underrepresented in this body of evidence.

Description of the evidence

- The search included articles from very high and high Human Development Index (HDI) countries, and the search timeframe spanned between January 1980 and January 2017.
- This evidence review includes 10 prospective cohort studies and 1 pilot RCT that examined the relationship between dietary patterns before and during pregnancy and risk of GDM (1-11).
- Only three studies were conducted in a cohort or a trial that was originally designed to assess the relationship between maternal diet and risk of GDM (1, 3, 9). Other studies assessed exposures and outcomes as part of secondary objectives/analysis.
- Of the 11 studies, three used Nurses' Health Study II (NHS II) cohort data (8, 10, 11), two used Australian Longitudinal Study on Women's Health cohort data (6, 7), two used Project Viva cohort data (4, 5), one used Gestational Diabetes in the Mediterranean Region Study data (3), and one used Born in Guangzhou Cohort Study data (2). Two were individual studies (1, 9).
- About half of the studies (n=6) (including one RCT, three NHS II and two Project Viva) were conducted in the U.S (1, 4, 5, 8, 10, 11). Other countries in which studies were conducted include Australia (6, 7), China (2) and Iceland (9). In addition, a multi-country study was conducted in the following countries: Algeria, France, Greece, Italy, Lebanon, Malta, Morocco, Serbia, Syria and Tunisia (3). See the map below.



Subject characteristics:

- **Sample size** of the studies ranged from 12 subjects in the RCT (1) to 15,254 subjects in the NHS II (8), with a median sample size of 3,063.
- **Age**: Many studies included women between 20 and 40 years. Two cohorts (NHS II and Project Viva) included women outside of this age range (<20 years and ≥40 years), but the corresponding studies did not specify the number/percentage of women who were outside this range.
- **Singleton vs. multiple births**: Six studies included only singleton pregnancies (2, 4, 5, 8, 10, 11). The rest of the studies did not report these characteristics (1, 3, 6, 7, 9).
- **Health Characteristics**: A majority of the studies (n=9) excluded participants with a history of GDM or Type 1 or Type 2 diabetes. Only two studies included women with a history of GDM (3, 4), with Radesky reporting a prevalence of 2%. At least one study reported excluding women with polycystic ovary syndrome (PCOS) (4), whereas another study reported a PCOS prevalence of 7% (6). Only He et al. reported including participants with a family history of diabetes and the prevalence was 19% (2).
- **Smoking** during pregnancy varied across studies.
    - The prevalence of reported smoking during pregnancy among study participants was between 3% (4) and 8% (11).
    - Schoenaker et al. reported a pre-pregnancy smoking status of 20% (6), and these data were collected 3-9 years prior to becoming pregnant.
    - One study excluded smokers (9), and seven studies did not report smoking status (1-3, 5, 7, 8, 10).
- **Race/ethnicity**: More than half of the studies (n=7) did not report participants' race/ethnicity. Studies using NHS II data had a high percentage of white women (>90%) (8, 11). Similarly, studies using Project Viva data (4, 5) reported that a majority of participants were white women (72%).
- **Parity**: Most of the studies (n=10) included data on parity, although the percentage of nulliparous vs. multiparous women was highly variable. The NHS II reported that about a third of women were nulliparous at baseline (8, 10), whereas the Chinese study reported that 93% were nulliparous (2). Since NHS II and ALSWH were longitudinal, some women contributed more than one pregnancy to the study.
- **Pre-pregnancy BMI**: The percentage of subjects with self-reported pre-pregnancy BMI ≥30 in individual studies ranged from ~7% (7) to 23% (9). Some studies reported only the mean pre-pregnancy BMI (Range: ~23.9 to 24.6 kg/m^2). The RCT did not report BMI (1).
- **Maternal education**: All participants in the NHS II were nurses (8, 10, 11). Apart from three studies that did not report on maternal education (1, 3, 9), mothers with undergraduate degrees or higher ranged from ~55% to 69%.
- **Socioeconomic status** was not reported in a majority of studies. In Project Viva studies, 12%-13% of the participants had a household income <$40,000 (4, 5).

Interventions/Exposures:

Dietary patterns were assessed using index/score analysis and factor and principal components analysis (PCA); one study randomly assigned participants to one of two experimental diets. A description of the studies included by method used to measure dietary patterns is included below.

- **Index/score analysis (Table 1. Indices and scores used to assess the relationship between dietary patterns before and during pregnancy and risk of GDM):** Six studies included in this review used one or more of the following indices/scores:
    - Alternate Healthy Eating Index (aHEI) (8)
    - Alternate HEI for Pregnancy (AHEI-P) (5)
    - Alternate Mediterranean (aMED) (8)
    - Dietary Approaches to Stop Hypertension (DASH) (8)
    - Healthy Eating Index (HEI) (9)
    - Mediterranean Diet Score (3, 7)
    - Modified Alternate Healthy Eating Index-2010 (11)
- **Factor analysis and principal component analysis (Table 2. Summary of dietary patterns identified using factor or principal component analysis):** Five studies included in this review assessed dietary patterns using factor or PCA (2, 4, 6, 9, 10).
- **Experimental diet:** The pilot RCT in this body of evidence randomly assigned participants to one of two experimental diets (1):
    - Aboriginal carbohydrate diet (Low-GI): used carbohydrates from unprocessed whole grains, fruits, beans, vegetables, and many dairy products; includes most dense whole grain and multigrain breads, bran cereals, pastas, fresh fruits and vegetables, yogurt, ice cream, and nuts
    - Cafeteria carbohydrate diet (High-GI): used carbohydrates from highly processed grains, root vegetables, and simple sugars; includes many highly-refined breads, potatoes, instant rice, most breakfast cereals, desserts, and snack-type foods

Time point of exposure (Table 3. Time point of exposure assessment):

- Radesky et al. and Rifas-Shiman et al. used data from Project Viva and therefore had similar data collection protocols. The food frequency questionnaire (FFQ) was administered during the first trimester (~11 weeks), and the recall period reflected the time of conception until the time the FFQ was assessed. Project Viva also collected FFQ data between 26-28 weeks. While Rifas-Shiman et al. presented GDM outcomes pertaining to the second trimester exposure, this body of evidence excluded the second trimester exposure. This decision was made because some women might have known about their GDM status prior to the FFQ administration, thereby potentially impacting temporality (and this is consistent with Radesky et al.'s approach).
- Two studies collected dietary data during the second trimester (between ~19 and 27 weeks) (2, 9). For both of these studies the recall period was relatively short (<1 week). Although the studies reported overlapping time periods of exposure and outcome assessment, both of these articles clarified that exposure assessment preceded outcome assessment.
- Karamanos et al. reported gathering dietary data prior to performing the OGTT (24-32 weeks); however, it is unclear exactly when the dietary data were collected and what recall period was reflected.
- Studies from the NHS II and ALSWH used dietary data that were collected

between 2 and 10 years before pregnancy.

- The RCT in this body of evidence assigned women to experimental diets at 8 weeks and followed them throughout pregnancy

Table 1. Indices and scores used to assess the relationship between dietary patterns before and during pregnancy and risk of GDM

Index/ Score (Reference)	Med. Diet score[1] (min-max score)	Alternate HEI-P[2] (min-max score)	Med. Diet score[3] (min-max score)	aMED[4] (min-max score)	DASH[5] (min-max score)	aHEI[6] (min-max score)	HEI[7] (min-max score)	Alternate HEI-2010[8] (min-max score)
Article	Karamanos, 2014	Rifas-Shiman et al., 2009	Schoenaker, 2016	Tobias, 2012	Tobias, 2012	Tobias, 2012	Tryggvadottir, 2016	Zhang, 2014
Component	Total score: 0-12	Total score: 0-90	Total score: 0-10	Total score: 0 to 8	Total score: 8 to 39	Total score: 2.5 to 87.5	Total score: 8-800	Total score: 2.5-77.5
Vegetables	Vegetables ≥Median=1; <Median=0	Vegetables (0-10) (*Includes tofu and soybeans)*	Vegetables ≥Median=1; <Median=0	Vegetables ≥Median=1; <Median=0	Vegetables (1-5)	Vegetables (0-10)	Vegetables (1-100)	Vegetables (0-10)

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Index/ Score (Reference)	Med. Diet score[1] (min-max score)	Alternate HEI-P[2] (min-max score)	Med. Diet score[3] (min-max score)	aMED[4] (min-max score)	DASH[5] (min-max score)	aHEI[6] (min-max score)	HEI[7] (min-max score)	Alternate HEI-2010[8] (min-max score)
	Potatoes ≥Median=1; <Median=0							
Fruit and/or nuts	Fruits ≥Median=1; <Median=0	Fruits (0 -10)	Fruit and nuts+ ≥Median=1; <Median=0	Fruits ≥Median=1; <Median=0	Fruits (1-5)	Fruits (0-10)	Fruits (1-100)	Fruit (0-10)
				Nuts included along with legumes	*Nuts included along with legumes*	*Nuts included along with legumes*	Nuts and Seeds (1-100)	Nuts (0-10)
Cereals/ Grains and whole grains	Bread ≥Median=1; <Median=0	blank	Cereals ≥Median=1; <Median=0	Whole grains ≥Median=1; <Median=0	Whole grains (1-5)	Cereal Fiber (0-10)	Unground/ Wholeground cereals (1-100)	Whole-grains (0-10)
	Cereals+ ≥Median=1; <Median=0							
Legumes	Legumes ≥Median=1; <Median=0		Legumes ≥Median=1; <Median=0	Nuts, legumes, soy ≥Median=1; <Median=0	Nuts, legumes, soy (1-5)	Nuts, legumes, soy (0-10)		

Index/ Score (Reference)	Med. Diet score[1] (min-max score)	Alternate HEI-P[2] (min-max score)	Med. Diet score[3] (min-max score)	aMED[4] (min-max score)	DASH[5] (min-max score)	aHEI[6] (min-max score)	HEI[7] (min-max score)	Alternate HEI-2010[8] (min-max score)
Meat	Meat ≥Median=0; <Median=1 (reverse scored)	Ratio of white (poultry/ fish) to red meat (beef, pork, lamb, processed) (0 -10)	Meat ≥Median=0; <Median=1 (reverse scored)	Red and processed meats ≥Median=0; <Median=1 (reverse scored)	Red and processed meats (1-5)	White:Red meat ratio (0-10)		Red and processed meat (0-10) (reverse scored)
		Excluded nuts and soy	Poultry ≥Median=0; <Median=1 (reverse scored)					
Fish and other protein foods	Fish	*Included with meat*	Fish ≥Median=1; <Median=0	Fish and seafood ≥Median=1; <Median=0			Fish and seafood (1-100)	
	Eggs ≥Median=0; <Median=1 (reverse scored)							

Index/ Score (Reference)	**Med. Diet score[1] (min-max score)**	**Alternate HEI-P[2] (min-max score)**	**Med. Diet score[3] (min-max score)**	**aMED[4] (min-max score)**	**DASH[5] (min-max score)**	**aHEI[6] (min-max score)**	**HEI[7] (min-max score)**	**Alternate HEI-2010[8] (min-max score)**
Dairy	Dairy products ≥Median=0; <Median=1 (reverse scored)		High-fat dairy ≥Median=0; <Median=1 (reverse scored)		Low-fat dairy (1-5)			
	Cheese ≥Median=0; <Median=1							
Fat	Ratio of olive oil to animal fat ≥Median=1; <Median=0	*trans* fat (0 - 10) (reverse scored)	M:S[9] fat ratio ≥Median=1; <Median=0	M:S[10] fat ratio ≥Median=1; <Median=0		*trans* fat (0-10) (reverse scored)		*trans* fat (0 - 10) (reverse scored)
		PUFA:SFA ratio (0-10)				PUFA:SFA (0-10)		PUFA (0-10)
								Long chain omega 3 fatty acids (0-10)
Fiber		Fiber (0-10)						

[9] Monounsaturated fat: saturated fat
[10] Monounsaturated fat: saturated fat

Index/ Score (Reference)	**Med. Diet score[1] (min-max score)**	**Alternate HEI-P[2] (min-max score)**	**Med. Diet score[3] (min-max score)**	**aMED[4] (min-max score)**	**DASH[5] (min-max score)**	**aHEI[6] (min-max score)**	**HEI[7] (min-max score)**	**Alternate HEI-2010[8] (min-max score)**
Nutrients		Folate (0-10)				Multivitamin use (0-10)	Vitamin D (1-100)	
		Calcium (0-10)						
		Iron (0-10)						
Alcohol		*Excluded alcohol*	Alcohol (score of 1 for 5-15 g/d)	Alcohol (score of 1 for 5-15 g/d)		Moderate alcohol		*Excluded alcohol*
Oils							Vegetable oils (1-100)	
Sodium					Sodium (1-5) (reverse scored)			Sodium (0-10) (reverse scored)
Soft Drinks/ Sugar sweetened beverages					Sweetened Beverages (1-5) (reverse scored)		Soft Drinks (1-100) (reverse scored)	Sugar sweetened beverages (0-10) (reverse scored)

Table 2. Summary of dietary patterns identified using factor or principal component analysis

Study	Dietary Patterns
He, 2015	**Vegetable pattern**: Frequent intake of root vegetables, beans, mushrooms, melon vegetables, seaweed, other legumes, fruits, leafy and cruciferous vegetables, processed vegetables, nuts, and cooking oil **Protein-rich pattern**: Frequent intake of poultry, red meat, animal organ meat, grains (mainly refined), processed meat, fish, soups, leafy and cruciferous vegetables, and eggs **Prudent pattern**: Frequent intake of dairy products, nuts, eggs, fish, soups, fruits; infrequent intake of processed meat, sugar-sweetened beverages, and processed vegetables **Sweets and seafood pattern**: Cantonese desserts, mollusks and shellfish, and sugar-sweetened beverages; low intakes of grains (mainly refined) and leafy and cruciferous vegetables
Radesky, 2008	**Prudent pattern**: High in veg, fruit, legumes, fish, poultry, eggs, salad dressing and whole grains **Western pattern**: Red and processed meats, sugar-sweetened beverages, French fries, high-fat dairy products, desserts, butter and refined grains
Schoenaker, 2015	**Meats, snacks and sweets pattern**: high consumption of red and processed meat, cakes, sweet biscuits, fruit juice, chocolate, and pizza **Mediterranean-style pattern**: high factor loadings for vegetables, legumes, nuts, tofu, rice, pasta, rye bread, red wine, and fish **Fruit and low-fat dairy pattern**: positively correlated with fruits and lowfat dairy including yoghurt, low-fat cheese, and skimmed milk **Cooked vegetables pattern**: high consumption of carrots, peas, cooked potatoes, cauliflower, and pumpkin
Tryggvadottir, 2016	**Prudent pattern**: Positive for seafood, eggs, vegetables, fruit and berries, vegetable oils, nuts and seeds, pasta, breakfast cereals, and coffee and tea; Negative for soft drinks and French fries
Zhang, 2006	**Prudent pattern**: High intake of fruit, green leafy veg, poultry and fish **Western pattern**: High intake of red meat, processed meat, refined grain products, sweets, French fries and pizza

Table 3. Time point of exposure assessment

Index/Score	Preconception	First trimester	Second trimester	Third trimester
Karamanos, 2014 (39)	1-6 mo preconception	Dietary assessment represents the period prior to performing OGTT (24-32 wk). However, the time point of measurement or the duration are unspecified.		
Rifas-Shiman, 2009 (32)		11.7±3.1 wk		
Schoenaker, 2016 (33)	3, 6, or 9 yrs preconception			
Tobias, 2012 (42)	Cumulative avg (2, 6, 10 y preconception)			
Tryggvadottir, 2016 (43)			4 days 19 to 24 wk	
Zhang, 2014 (45)	Cumulative avg (2, 6 or 10 y preconception)			
PCA / Factor Analysis				
He, 2015 (38)			1 wk 24 to 27 wk	
Radesky, 2008 (40)		11.8 (5 to 25.6) wk		
Schoenaker, 2015 (41)	3, 6, or 9 yrs preconception			
Zhang, 2006 (44)	Cumulative avg (4 or 8 y preconception)			
Other Method				
Clapp, 1998 (37)	RCT subjects were enrolled and tested before pregnancy, randomized at 8 wks to aboriginal or cafetaria diet, and followed up throughout pregnancy			

Outcomes:

Studies assessed several outcomes related to GDM, including blood glucose levels, glucose tolerance, insulin, HOMA-IR, and gestational diabetes. Table 4. Summary of outcome definitions summarizes the outcomes and diagnostic criteria grouped by methodology used to create dietary patterns.

Table 4. Summary of outcome definitions

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Index/Score						
Karamanos, 2014	Plasma glucose levels Glucose tolerance GDM	GDM (ADA): Requires two or more cutoff points to be met or exceeded; Cutoff points: fasting ≥5.3, 1-h ≥10.0 and 2-h ≥8.6 mm/l GDM (IADPSG): Requires one glucose value equal to or above any cutoff point; Cutoff points: fasting ≥5.1, 1 h ≥10.0, and 2 h ≥8.5 mm/l	American Diabetes Association (ADA) 2010 guidelines International Association of the Diabetes and Pregnancy Study Groups (IADPSG)	75g OGTT	ADA, 2010[14] International Association of Diabetes and Pregnancy Study Groups Consensus Panel, 2010[15]	N/A

[14] American Diabetes, A. (2010). Diagnosis and Classification of Diabetes Mellitus. Diabetes Care, 33(Suppl 1), S62-S69. doi:10.2337/dc10-S062
[15] No citation provided.

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Rifas-Shiman, 2009	Blood glucose levels Impaired glucose tolerance GDM	If 1-hour blood glucose level was ≥140, referred to 100g fasting glucose 3-hour tolerance test Impaired glucose tolerance: Failed challenge test, but had 0 or 1 abnormal results on fasting glucose tolerance test GDM: At least 2 abnormal results to the 100g OGTT: ≥95 mg/dL (5.2 mmol/L) at baseline, ≥180 mg/dL (9.9 mmol/L) at 1 hour, ≥155 mg/dL (8.5 mmol/L) at 2 hours, and ≥140 mg/dL (7.7 mmol/L) at 3 hours	Carpenter-Coustan (CC) criteria	Non-fasting oral glucose challenge, 50g, followed by 100g OGTT if needed	Carpenter, 1982[16]	Preeclampsia Gestational weight gain Birth weight
Schoenaker, 2016	GDM	Glucose intolerance with onset or first recognition during pregnancy. Fasting glucose ≥5.5 mmol/dL and/or 2-h level of ≥8.0 mmol/L at 24-28wk of gestation	The Australasian Diabetes in Pregnancy Society	Self-reported based on physician diagnosis between 2003 and 2012	Hoffman, 1998[17]	Hypertensive disorders of pregnancy

[16] Carpenter, M. W., & Coustan, D. R. (1982). Criteria for screening tests for gestational diabetes. Am J Obstet Gynecol, 144(7), 768-773.
[17] Hoffman, L., Nolan, C., Wilson, J. D., Oats, J. J., & Simmons, D. (1998). Gestational diabetes mellitus--management guidelines. The Australasian Diabetes in Pregnancy Society. Med J Aust, 169(2), 93-97.

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Tobias, 2012	GDM	Requires at least two values at or above the following cutoff values: fasting, 1-hour, 2-hour, and 3-hour plasma glucose levels of ≥105mg/dL, ≥190mg/dL, ≥165mg/dL, and ≥145mg/dL, respectively	National Diabetes Data Group (most but not all physicians reportedly used these criteria)	Self-reported physician diagnosis	NDDG, 1979[18]	N/A
Tryggvadottir, 2016	Serum glucose Insulin HOMA-IR GDM	GDM: One or more abnormal values from the following: Fasting plasma glucose between 5.1 and 6.9 mmol/l, 1-h value of ≥10.0 mmol/l or a 2-h plasma glucose of 8.5–11.0 mmol/l	WHO	2h, 75 g OGTT	WHO, 2013[19]	N/A

[18] Classification and diagnosis of diabetes mellitus and other categories of glucose intolerance. National Diabetes Data Group. (1979). Diabetes, 28(12), 1039-1057.
[19] Diagnostic Criteria and Classification of Hyperglycaemia First Detected in Pregnancy. (2013). Geneva: World Health Organization.

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Zhang, 2014	GDM	Requires at least two values at or above the following cutoff values: fasting, 1-hour, 2-hour, and 3-hour plasma glucose levels of ≥105mg/dL, ≥190mg/dL, ≥165mg/dL, and ≥145mg/dL, respectively	National Diabetes Data Group (most but not all physicians reportedly used these criteria)	Self-reported physician diagnosis	NDDG, 1979[20]	N/A
PCA/Factor Analysis						
He, 2015	GDM	Blood glucose values met or exceeded the following criteria: fasting, 5.1 mmol/L; 1h, 10.0 mmol/L; 2 h, 8.5 mmol/L	International Association of Diabetes and Pregnancy Study Groups (IADPSG)	75g, 2h OGTT	Metzger, 2010[21]	N/A

[20] Classification and diagnosis of diabetes mellitus and other categories of glucose intolerance. National Diabetes Data Group. (1979). Diabetes, 28(12), 1039-1057.
[21] International Association of Diabetes & Pregnancy Study Groups Consensus Panel. (2010). International Association of Diabetes and Pregnancy Study Groups Recommendations on the Diagnosis and Classification of Hyperglycemia in Pregnancy. Diabetes Care, 33(3), 676-682. doi:10.2337/dc09-1848

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Radesky, 2008	Impaired glucose tolerance GDM	If 1-hour blood glucose level was ≥140, referred to 100g fasting glucose 3-hour tolerance test Impaired glucose tolerance: Failed challenge test, but had 0 or 1 abnormal results on fasting glucose tolerance test GDM: At least 2 abnormal results to the 100g OGTT: ≥95 mg/dL (5.2 mmol/L) at baseline, ≥180 mg/dL (9.9 mmol/L) at 1 hour, ≥155 mg/dL (8.5 mmol/L) at 2 hours, and ≥140 mg/dL (7.7 mmol/L) at 3 hours	Carpenter-Coustan (CC) criteria	Non-fasting oral glucose challenge, 50g, followed by 100g OGTT if needed	Carpenter, 1982[22]	N/A

[22] Carpenter, M. W., & Coustan, D. R. (1982). Criteria for screening tests for gestational diabetes. Am J Obstet Gynecol, 144(7), 768-773.

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Schoenaker, 2015	GDM	During study period, diagnostic criteria for GDM in Australia included 1 h venous plasma glucose level ≥6.55% (7.8 mmol/l) after 50 g glucose load, or 1 h venous plasma glucose level ≥6.65% (8.0 mmol/l) after a 75 g glucose load; diagnosis confirmed with 75 g OGTT (fasting) with a venous plasma glucose level at 0 h of ≥5.1% (5.6 mmol/l) and/or at 2 h of ≥6.65% (8.0 mmol/l)	The Australasian Diabetes in Pregnancy Society	Self-reported physician diagnosis in response to question, “Were you diagnosed or treated for gestational diabetes?”	Hoffman, 1998[23]	N/A
Zhang, 2006	GDM	Requires at least two values at or above the following cutoff values: fasting, 1-hour, 2-hour, and 3-hour plasma glucose levels of ≥105mg/dL, ≥190mg/dL, ≥165mg/dL, and ≥145mg/dL, respectively	National Diabetes Data Group (most but not all physicians reportedly used these criteria)	Self-reported physician diagnosis	NDDG, 1979[24]	N/A
Other Method						

[23] Hoffman, L., Nolan, C., Wilson, J. D., Oats, J. J., & Simmons, D. (1998). Gestational diabetes mellitus--management guidelines. The Australasian Diabetes in Pregnancy Society. Med J Aust, 169(2), 93-97.
[24] Classification and diagnosis of diabetes mellitus and other categories of glucose intolerance. National Diabetes Data Group. (1979). Diabetes, 28(12), 1039-1057.

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Clapp, 1998	Blood glucose Serum insulin	N/A	N/A	Blood glucose: glucose oxidase methodology and an accurately calibrated Yellow Springs glucose and lactate analyzer Serum insulin: double antibody radioimmunoassay	N/A	N/A

Evidence synthesis

With 10 prospective cohort studies and 1 RCT, there is a modest body of evidence available to examine the relationship between dietary patterns before and during pregnancy and risk of GDM. Table 5. Results grouped by methodology used for dietary pattern assessment, provides more information on the findings of each of these studies. There is substantial heterogeneity in the methodology employed to define and assess dietary patterns, which makes it difficult to compare across studies. Also, the time point of dietary assessment is variable. Despite these differences, there is modest evidence of an association between dietary patterns before pregnancy and risk of GDM.

Dietary patterns assessed via index/score

Six studies used indices/scores to assess dietary patterns. Three of these found an inverse association between greater adherence to a healthy diet before and during pregnancy and risk of GDM and one study found that lower adherence to a healthy diet is associated with greater GDM risk (3, 7, 8, 11).

Before Pregnancy: Studies that assessed maternal diet before pregnancy using an index/score method indicated that diets rich in vegetables, legumes, fruits and nuts, whole grains, and low in meat (specifically red and processed meats), sugar sweetened beverages and *trans* fat were associated with lower risk of GDM. A summary of findings across studies is presented below.

- Schoenaker et al.(7) assessed adherence to a Mediterranean dietary pattern before pregnancy. Beneficial dietary components included vegetables, legumes, fruits and nuts, cereals, fish and monounsaturated fat:saturated fat ratio, and detrimental dietary components included meat, poultry and high-fat dairy. Lower adherence to the Mediterranean diet, in comparison to higher adherence, was associated with increased odds of GDM.
- Both Tobias et al.(8) and Zhang et al. (11) used data from the NHS II and assessed the association between diet before pregnancy and risk of GDM.
    - Zhang et al. (11) looked at the Alternate Healthy Eating Index-2010, which is characterized by higher intake of vegetables, fruit, nuts, whole grains, polyunsaturated fatty acids and long-chain omega-3 fatty acids and lower intake of red and processed meats, sugar sweetened beverages, *trans* fat and sodium. The authors concluded that higher adherence to the modified Alternate Healthy Eating Index-2010 was associated with a decreased risk of GDM.
    - Tobias et al. (8) assessed dietary adherence to three different dietary patterns: alternate Mediterranean Diet, Dietary Approaches to Stop Hypertension (DASH), and alternate Healthy Eating Index (aHEI).
        - Alternate Mediterranean diet: Positively scored components were fruits, vegetables, nuts, legumes, soy, fish and seafood, whole grains, moderate alcohol, MUFA:SFA, and the negatively-scored components were red and processed meat
        - Dietary Approaches to Stop Hypertension (DASH): Positively-scored components were fruits, vegetables, nuts, legumes, soy, whole grains, low-fat dairy, and the negatively-scored components were red and processed meats, sweetened beverages and

sodium

- Alternative Healthy Eating Index (aHEI): Positively-scored components were fruits, vegetables, nuts, legumes, soy, white:red meat ratio, cereal fiber, moderate alcohol, PUFA:SFA, multivitamin use, and the negatively-scored component included *trans* fat

In this study, higher adherence to a healthy dietary pattern was inversely associated with the risk of GDM, irrespective of the approach used to assess dietary patterns.

Pregnancy: Results were heterogeneous when examining dietary patterns during pregnancy and risk of GDM. Rifas-Shiman et al.(5) showed that adherence to the Alternate Healthy Eating Index improved blood glucose level but was not associated with GDM. Similarly, Tryggvadottir et al.(9) reported a significant association only for those who were overweight and those with obesity. Karamanos et al.(3) showed that a Mediterranean dietary pattern was associated with reduced risk of GDM, but it is unclear at which point during pregnancy diet was measured. Tryggvadottir et al. (9) collected dietary data right before GDM assessment (19 to 24 weeks) with a relatively short recall period of 4 days. Rifas-Shiman et al.(5) assessed dietary data at the end of the first trimester (11.7 weeks), and the recall period was the entire first trimester. A summary of findings across studies is presented below.

- In a multi-country study, Karamanos et al. (3)assessed the association between Mediterranean diet intake during pregnancy and the incidence of GDM. The Mediterranean diet was characterized by intake of bread, cereals, legumes, vegetables, fruits, meat, fish, eggs, the ratio of olive oil to animal fat, potatoes, cheese, and dairy products. Some of the “healthy” foods included vegetables and legumes and the “unhealthy” foods included meat and eggs. The study found that greater adherence to a Mediterranean dietary pattern was inversely associated with the risk of GDM and improved glucose tolerance.
- Tryggvadottir et al.(9) used a Healthy Eating Index that assessed conformance to food-based dietary guidelines from the Icelandic Directorate of Health. The scores were based on intake of fish and seafood, vegetables, fruits, vegetable oils, nuts and seeds, unground/wholeground cereals, soft drinks, and vitamin D. The results from an unadjusted analysis showed that higher adherence to a healthy diet was correlated with a lower incidence of GDM, but this was observed only among overweight women and those with obesity.
- Rifas-Shiman et al. (5) used an Alternate Healthy Eating Index (modified for pregnancy), which was characterized by intake of vegetables, fruit, ratio of white to red meat, fiber, *trans* fat, ratio of polyunsaturated to saturated fatty acids, and folate, calcium, and iron from foods. The study showed that while adherence to this dietary pattern was associated with improved blood glucose level, there was no association with GDM.

Dietary patterns assessed via factor or principal component analysis

Five studies used data-driven methods (i.e., principal component analysis or exploratory factor analysis) to assess dietary patterns. These studies found an inverse association between greater adherence to vegetable, Mediterranean-style and prudent dietary patterns and risk of GDM (2, 6, 9, 10). Also, studies found that higher adherence to a sweets and seafood dietary pattern and Western pattern were associated with the increased risk of GDM.

Before Pregnancy: Studies that assessed maternal diet before pregnancy indicated that a diet rich in vegetables, legumes, and nuts and low in processed meat was inversely associated with the risk of GDM.

- Schoenaker et al. (6) demonstrated that higher adherence to a Mediterranean style dietary pattern (characterized by high factor loadings for vegetables, legumes, nuts, tofu, rice, pasta, rye bread, red wine, and fish) before pregnancy was associated with a reduced risk of GDM. The study also assessed other patterns such as 1) meat, snacks and sweet pattern (characterized by high consumption of red and processed meat, cakes, sweet biscuits, fruit juice, chocolate, and pizza), 2) fruit and low-fat dairy pattern (positively correlated with fruits and low fat dairy including yogurt, low-fat cheese, and skimmed milk) and 3) cooked vegetables pattern (characterized by high consumption of carrots, peas, cooked potatoes, cauliflower, and pumpkin). These patterns were not associated with the risk of GDM.
- Zhang et al. (10) identified two dietary patterns: 1) Prudent dietary pattern with high intake of components such as fruits, green leafy vegetables, poultry and fish; 2) Western dietary pattern with higher intake of components such as red meat, processed meat, refined grain products, sweets, French fries and pizza. Greater adherence to a Western dietary pattern and lower adherence to a prudent dietary pattern before pregnancy was associated with an increased risk of GDM.

Pregnancy: Results of the studies that assessed dietary patterns during pregnancy and risk of GDM were mixed. For example, He et al.(2) and Tryggvadottir et al. (9) demonstrated that greater adherence to a vegetable dietary pattern and a prudent dietary pattern was associated with reduced GDM risk, while greater adherence to a sweets and seafood pattern was associated with an increased GDM risk. In both studies, diet was assessed only in second trimester (between 19 to 27 weeks) and the recall period was relatively short (4 days in Tryggvadottir et al.(9) and 1 week in He et al. (2) study). Radesky et al.(4) showed no association between prudent western dietary patterns and GDM risk. In this study, dietary data were collected around 11.8 weeks, and the recall period was from the time of conception until data collection. A summary of findings across studies is presented below.

- He et al. (2) demonstrated that higher adherence to a vegetable dietary pattern (characterized by positive loadings for root vegetables, beans, mushrooms, melon vegetables, seaweed, other legumes, fruits, leafy and cruciferous vegetables, processed vegetables, nuts and cooking oil) was inversely associated with the risk of GDM. The same study also showed that higher adherence to sweets and seafood pattern (characterized by positive loadings for Cantonese desserts, molluscs and shellfish, sugar-sweetened beverages, grains and leafy and cruciferous vegetables) were associated with an increased risk of GDM.
- Tryggvadottir et al. (9) demonstrated that a prudent dietary pattern (characterized by positive loadings for seafood, eggs, vegetables, fruit and berries, vegetable oils, nuts and seeds, pasta, breakfast cereals, and coffee and tea, and negative for soft drinks and French fries) was associated with a lower

risk of GDM.

- Radesky et al. (4) identified two dietary patterns: 1) prudent dietary pattern characterized by high intake of vegetables, fruit, legumes, fish, poultry, eggs, salad dressing and whole grains; and 2) Western dietary pattern characterized by high intake of red and processed meats, sugar-sweetened beverages, French fries, high fat dairy products, desserts, butters and refined grains. Neither of these patterns was associated with the risk of impaired glucose tolerance or GDM.

Dietary patterns assessed using other methods

This body of evidence includes one pilot RCT with 12 subjects. At 8 weeks of gestation, subjects were randomized to an aboriginal carbohydrate diet (a low glycemic index diet characterized by carbohydrates from unprocessed whole grains, fruits, beans, vegetables, and many dairy products; includes most dense whole grain and multigrain breads, bran cereals, pastas, fresh fruits and vegetables, yogurt, ice cream, and nuts) or a cafeteria carbohydrate diet (a high glycemic index diet characterized by carbohydrates from highly processed grains, root vegetables, and simple sugars; includes many highly refined breads, potatoes, instant rice, most breakfast cereals, desserts, and snack-type foods). Randomization to a cafeteria diet was associated with an increase in glucose response in mid- and late-pregnancy. Note that the study did not assess GDM.

Table 5. Results grouped by methodology used for dietary pattern assessment

Key for color-coding:
Dietary pattern categorized as beneficial when… Greater adherence reduces risk of GDM Lower adherence increases risk of GDM
Dietary pattern categorized as detrimental when… Greater adherence increases risk of GDM Lower adherence decreases risk of GDM

Author, Year **Country, N**	**Exposure**	**Outcome**	**Significant finding**	**NS finding**
Index/Score				
Before Pregnancy				
Schoenaker, 2016 **Australia** **N = 3,378**	**Mediterranean Diet Score** For beneficial foods (vegetables, legumes, fruit and nuts, cereals, fish, and mono-:saturated fat ratio), a value of 1 was given if above the median, 0 if below For detrimental foods (meat, poultry, high-fat dairy), a value of 0 was given if above the median, 1 if below For alcohol, a value of 1 was given for daily consumption of 5-15 g/d	GDM (OR) High=REF	Total effect (per 1-kg/m2 increase in BMI): 1.35 (95% CI: 1.02, 1.60)	

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
Tobias, 2012 **USA** **N = 21,376 births (15,254 participants)**	**Alternate Mediterranean (aMED)** Positively-scored components: Fruit; vegetables; nuts, legumes, soy; fish and seafood; whole grains; moderate alcohol; MUFA:SFA Negatively-scored components: Red and processed meat	GDM (RR) Q1=REF	Q3: 0.76 (95% CI: 0.60, 0.95) Q4: 0.76 (95% CI: 0.60, 0.95) For 1 SD increase in adherence: 0.90 (95% CI: 0.83, 0.97)	Q2: 0.95 (95% CI: 0.79, 1.14)
	Dietary Approaches to Stop Hypertension (DASH) Positively-scored components: Fruit; vegetables; nuts, legumes, soy; whole grains; low-fat dairy Negatively-scored components: Red and processed meats, sweetened beverages, sodium	GDM (RR) Q1=REF	Q2: 0.77 (95% CI: 0.63, 0.93) Q3: 0.78 (95% CI: 0.64, 0.95) Q4: 0.66 (95% CI: 0.53, 0.82) For 1 SD increase in adherence: 0.85 (95% CI: 0.79, 0.92)	
	Alternative Healthy Eating Index (aHEI) Positively-scored components: Fruit; vegetables; nuts, legumes, soy; white:red meat ratio; cereal fiber; moderate alcohol; PUFA:SFA; multivitamin use Negatively-scored components: trans fat	GDM (RR) Q1=REF	Q3: 0.75 (95% CI: 0.61, 0.91) Q4: 0.54 (95% CI: 0.43, 0.68) For 1 SD increase in adherence: 0.76 (95% CI: 0.70, 0.82)	Q2: 0.96 (95% CI: 0.79, 1.15)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
	Modified aMED Same as aMED, but without MUFA:SFA	GDM (RR) Q1=REF	Q4: 0.75 (95% CI: 0.61, 0.91)	
	OMNI-protein Same as DASH, but included additional points for increasing quintiles of vegetable-based protein intake and decreasing quintiles for total carb intake (% total energy)	GDM (RR) Q1=REF	Q4: 0.68 (95% CI: 0.55, 0.85)	
	OMNI-fat Same as DASH, but included additional points for increasing quintiles of vegetable-based fat intake and decreasing quintiles of total carb intake (% of total energy)	GDM (RR) Q1=REF	Q4: 0.74 (95% CI: 0.60, 0.91)	

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
Zhang, 2014 **USA** **N = 20,136 births (14,437 participants)**	**Modified Alternative Healthy Eating Index-2010** Positively-scored components: vegetables, fruit, nuts, whole grains, polyunsaturated fatty acids, and long chain omega 3 fatty acids Negatively-scored components: red and processed meats, sugar sweetened beverages, trans fats, and sodium	GDM (RR) Q1=REF	Q5: 0.75 (95% CI: 0.59, 0.94) Healthy diet (score in upper two-fifths vs lower three-fifths): 0.81 (95% CI: 0.70, 0.94)	Q2: 0.96 (95% CI: 0.79, 1.17) Q3: 0.98 (95% CI: 0.80, 1.21) Q4: 0.84 (95% CI: 0.67, 1.04)
Pregnancy				
Karamanos, 2014 **Algeria, France, Greece, Italy, Lebanon, Malta, Morocco, Serbia, Syria, Tunisia** **N = 1,003**	**Mediterranean Diet (MedDiet) Score** 1 point given for intake above the median for "healthy foods (that is, vegetables, legumes and so on)," and 1 point given for intake below the median for "less healthy foods (that is, meat, eggs and so on)" Components: bread, cereals, legumes, vegetables, fruits, meat, fish, eggs, the ratio of olive oil to animal fat, potatoes, cheese, and dairy products	Glucose tolerance (Mean ± SEM; mmol/l)	Plasma glucose 1 h post-load: 8.0±0.1 (low MedDiet score) vs 7.7±0.1 (high MedDiet score)	Fasting plasma glucose: 4.6±0.1 (low) vs 4.5±0.1 (high) Plasma glucose 2 h post-load: 6.8±0.1 (low) vs 6.6±0.1 (high)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		GDM (ADA; OR) Low=REF	High: 0.618 (95% CI: 0.401, 0.95)	
		GDM (IADPSG; OR) Low=REF	High: 0.655 (95% CI: 0.495, 0.867)	
Rifas-Shiman, 2009 **USA** **N = 1,777 (1st trimester)**	**Alternate Healthy Eating Index for Pregnancy (AHEI-P)** Components: vegetables; fruit; ratio of white to red meat; fiber; *trans* fat; ratio of polyunsaturated to saturated fatty acids; and folate, calcium, and iron from foods	Blood glucose levels (β for each 5 point increase in AHEI-P score; mg/dL)	1st trimester: −0.64 (95% CI: -1.25, -0.02)	
		Impaired glucose tolerance (OR – for each 5 point increase in AHEI-P score) Normal=REF		1st trimester: 1.00 (95% CI: 0.93, 1.08)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		GDM (OR – for each 5 point increase in AHEI-P score) Normal=REF		1st trimester: 0.97 (95% CI: 0.87, 1.08)
Tryggvadottir, 2016[25] **Iceland** **N = 168**	**HEI using food-based dietary guidelines from the Icelandic Directorate of Health** Based on intake of fish and seafood, vegetables, fruits, vegetable oils, nuts and seeds, unground/wholeground cereals, soft drinks, and vitamin D	GDM (Chi-square)	Highest vs. low/medium adherence (only among overwt/obese women): 3.8% vs. 25.0%	Highest vs. low/medium adherence: 3.6% vs. 13.4%
PCA/Factor Analysis				
Before Pregnancy				
Schoenaker, 2015 **Australia** **N = 3,853**	**Meats, Snacks and Sweets** High consumption of red and processed meat, cakes, sweet biscuits, fruit juice, chocolate, and pizza	GDM (RR) Tertile 1=REF	None	Tertile 2: 1.03 (95% CI: 0.74, 1.45) Tertile 3: 1.23 (95% CI: 0.76, 1.97) β (1 SD increase in score): 1.35 (95% CI: 0.98, 1.81)

[25] Tryggvadottir, 2016 is listed twice in the table: once under Index/Score and once under Principal Component Analysis / Factor Analysis

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
	Mediterranean-Style High factor loadings for vegetables, legumes, nuts, tofu, rice, pasta, rye bread, red wine, and fish	GDM (RR) Tertile 1=REF	Tertile 3: 0.56 (95% CI: 0.41, 0.77)	Tertile 2: 0.97 (95% CI: 0.75, 1.28) β (1 SD increase in score): 0.85 (95% CI: 0.76, 0.98)
	Fruit and Low-Fat Dairy Positively correlated with fruits and lowfat dairy including yoghurt, low-fat cheese, and skimmed milk	GDM (RR) Tertile 1=REF		Tertile 2: 1.12 (95% CI: 0.83, 1.49) Tertile 3: 1.01 (95% CI: 0.76, 1.37)
	Cooked Vegetables High consumption of carrots, peas, cooked potatoes, cauliflower, and pumpkin	GDM (RR) Tertile 1=REF		Tertile 2: 0.83 (95% CI: 0.61, 1.13) Tertile 3: 1.04 (95% CI: 0.77, 1.38)
Zhang, 2006 **USA** **N = 13,110**	**Prudent** High intake of fruit, green leafy veg, poultry and fish	GDM (RR) Q5=REF	Q1: 1.37 (95% CI: 1.09, 1.72)	Q2: 1.19 (95% CI: 0.94, 1.51) Q3: 1.07 (95% CI: 0.84, 1.36) Q4: 1.20 (95% CI: 0.95, 1.51)
	Western High intake of red meat, processed meat, refined grain products, sweets, French fries and pizza	GDM (RR) Q1=REF	Q5: 1.63 (95% CI: 1.20, 2.21)	Q2: 1.09 (95% CI: 0.85, 1.41) Q3: 1.22 (95% CI: 0.94, 1.59) Q4: 1.25 (95% CI: 0.94, 1.65)
Pregnancy				

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
He, 2015 **China** **N = 3,063**	**Vegetable** Freq intake of root vegetables, beans, mushrooms, melon vegetables, seaweed, other legumes, fruits, leafy and cruciferous vegetables, processed vegetables, nuts, and cooking oil	GDM (RR) Tertile 1=REF	Tertile 3: 0.79 (95% CI: 0.64, 0.97)	Tertile 2: 1.0 (95% CI: 0.83, 1.21)
	Protein-Rich Freq intake of poultry, red meat, animal organ meat, grains (mainly refined), processed meat, fish, soups, leafy and cruciferous vegetables, and eggs	GDM (RR) Tertile 1=REF		Tertile 2: 0.99 (95% CI: 0.81, 1.20) Tertile 3: 0.95 (95% CI: 0.78, 1.16)
	Prudent Freq intake of dairy products, nuts, eggs, fish, soups, fruits; infrequent intake of processed meat, sugar-sweetened beverages, and processed vegetables	GDM (RR) Tertile 1=REF		Tertile 2: 0.96 (95% CI: 0.78, 1.17) Tertile 3: 1.00 (95% CI: 0.82, 1.22)
	Sweet and Seafood Cantonese desserts, molluscs and shellfish, and sugar-sweetened beverages; low intakes of grains (mainly refined) and leafy and cruciferous vegetables	GDM (RR) Tertile 1=REF	Tertile 3: 1.23 (95% CI: 1.02, 1.49)	Tertile 2: 0.84 (95% CI: 0.68, 1.04)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
Radesky, 2008 **USA** **N = 1,733**	**Prudent** High in veg, fruit, legumes, fish, poultry, eggs, salad dressing and whole grains	GDM (OR) Q1=REF		Q2: 0.56 (95% CI: 0.26, 1.21) Q3: 1.06 (95% CI: 0.55, 2.05) Q4: 1.13 (95% CI: 0.59, 2.16)
	Western Red and processed meats, sugar-sweetened beverages, French fries, high-fat dairy products, desserts, butter and refined grains	GDM (OR) Q1=REF		Q2:1.14 (95% CI: 0.56, 2.29) Q3: 1.63 (95% CI: 0.84, 3.19) Q4: 0.87 (95% CI: 0.41, 1.83)
Tryggvadottir, 2016[26] **Iceland** **N = 168**	**Prudent** Positive for seafood, eggs, vegetables, fruit and berries, vegetable oils, nuts and seeds, pasta, breakfast cereals, and coffee and tea; Negative for soft drinks and French fries	GDM (OR) REF not identified	All participants: 0.44 (95% CI: 0.21, 0.90) Overweight/obese prepregnancy: 0.31 (95% CI: 0.13, 0.75)	

[26] Tryggvadottir, 2016 is listed twice in the table: once under Index/Score and once under Principal Component Analysis/Factor Analysis

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		GDM (Chi-square)	Highest vs. low/medium adherence: 1.8% vs. 14.3% Highest vs. low/medium adherence (only overwt/obese women): 3.7% vs. 25.5%	
Other Method				
Pregnancy				
Clapp, 1998 **USA** **N = 12**	**Aboriginal Carbohydrate Diet (Low-GI)** Carbs from unprocessed whole grains, fruits, beans, vegetables, and many dairy products; includes most dense whole grain and multigrain breads, bran cereals, pastas, fresh fruits and vegetables, yogurt, ice cream, and nuts	Glycemic response to test meal (mg/min)		Before pregnancy: 10.8 ± 5.4 vs Late pregnancy: 11.0 ± 4.3
	Cafeteria Carbohydrate Diet (High-GI) Carbs from highly processed grains, root vegetables, and simple sugars; includes many highly refined breads, potatoes, instant rice, most breakfast cereals, desserts, and snack-type foods	Glycemic response to test meal (mg/min)	Before pregnancy: 15.6 ± 2.0 vs Mid and late pregnancy: 27.9 ± 4.1	

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
	Aboriginal vs Cafeteria	Average serum insulin response over 180 min to test meal (µU/mL/min)	Before pregnancy: Aboriginal: 21 ± 3 vs Cafeteria: 29 ± 1 Early pregnancy: Aboriginal: 21 ± 4 vs Cafeteria: 29 ± 3 Mid pregnancy: Aboriginal: 23 ± 5 vs Cafeteria: 39 ± 6 Late pregnancy: Aboriginal: 31 ± 5 vs Cafeteria: 54 ± 8	

Assessment of the body of evidence

This body of evidence was deemed to be limited in strength. The individual grading elements are discussed below.

Internal validity (determined with NEL Bias Assessment Tool):

- The data were primarily observational in nature, making it difficult to determine causal effect of the dietary patterns.
- The use of self-reported exposure and outcome measurement introduces potential measurement error and limits the validity of these data.
- FFQ were the primary measurement tool, and both the self-reported data obtained with this tool and the variability between studies in the type of FFQ used (i.e., number of items assessed, whether or not it is validated in a pregnant sample) affected the validity of these data.
- Key confounders such as parity, educational attainment, smoking status, race/ethnicity, maternal age, family poverty income ratio, pre-pregnancy BMI, mean total energy intake, family history of diabetes, history of GDM, diagnosis of pre-diabetes and PCOS were not consistently controlled across studies.
- Multiple studies did not report data on key confounding factors at baseline and did not control for potential differences across dietary groups in the analyses.

Adequacy:

- The number of articles in this body of evidence is modest. This evidence base includes 11 studies corresponding to 1 RCT and 6 unique cohorts. Notably, data from NHS II are represented in 3 studies (8, 10, 11), and data from ALSWH (6, 7) and Project Viva (4, 5) are represented in 2 studies each.
- The sample sizes varied considerably, ranging from 12 to 15,254 subjects in the NHS II, and most of the studies, except Karamanos et al., did not report power calculations. This limits the ability to draw meaningful conclusions.
- Sub-groups such as women of lower SES and different race/ethnicities were not adequately represented in this evidence base.
- The small number of unique research groups included limits the adequacy of this evidence base to answer the research question.

Consistency:

- There was moderate consistency across the body of evidence suggesting that adherence to “healthier” dietary patterns (defined different ways) is likely to be associated with better outcomes (gestational diabetes, glucose intolerance, insulin resistance, blood glucose levels, HOMA-IR).
- Specifically, a dietary pattern characterized by vegetables, fruits, whole grains, nuts, legumes and fish and lower in red and processed meat was associated with better glucose tolerance and reduced risk of GDM.
- When stratified by the time period of dietary pattern assessment, greater adherence to a dietary pattern 2-10 years before pregnancy showed a consistent inverse association with GDM risk (6-8, 10, 11). In addition to the consistency within the body of evidence, findings from this review are in agreement with similar research conducted in the non-pregnant populations. For example, many studies have found that adherence to a healthy dietary

pattern is associated with a lower plasma insulin, HOMA-IR [27] [28] [29].

- Although studies in this review measured diet during a wider time window of 2 to 10 years prior to pregnancy, other longitudinal studies have reported that maternal diet remains relatively stable from pre-pregnancy through pregnancy, thus supporting the validity of these findings [30] [31] [32].
- There were mixed findings when looking at studies that assessed diet during pregnancy: three studies showed an inverse association (2, 3, 9), one study showed an inverse association only with blood glucose but not with GDM (5), one study showed an effect on blood glucose and insulin response but did not study GDM (1), and one other study showed no association (4).

Impact:

- Almost all the studies in the body of evidence directly examined the relationship between different dietary patterns or different levels of adherence to a dietary pattern and GDM. However, only two cohorts (3, 9) and one pilot trial (1) were designed specifically to assess this relationship.
- Modest risk reduction was observed across studies that found a significant relationship between adhering to a "healthy" dietary pattern and risk of GDM.
- Highest adherence to a "healthy" dietary pattern before and during pregnancy was associated with a GDM risk reduction of 24% to 56%. Categorized another way, lower adherence to a "healthy" dietary pattern was associated with 35% to 37% increased GDM risk.
- Greater adherence to an "unhealthy" dietary pattern was associated with an increase in risk of 23% to 63%.

Generalizability:

- Only half of the studies (n=6) in this body of evidence were conducted in the U.S. Even the studies conducted in the U.S. had limited generalizability because the subjects predominantly represented Caucasian women with access to health care.
- Minority and lower SES populations were underrepresented in these data. It is unknown if the findings would be applicable in more diverse samples before or during pregnancy.

Other limitations/considerations:

The studies included in this review have a number of other limitations that make interpretation of results challenging:

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[27] Wang, Z., Adair, L. S., Cai, J., Gordon-Larsen, P., Siega-Riz, A. M., Zhang, B., & Popkin, B. M. (2017). Diet Quality Is Linked to Insulin Resistance among Adults in China. J Nutr. doi:10.3945/jn.117.256180
[28] Schulze, M. B., Hoffmann, K., Manson, J. E., Willett, W. C., Meigs, J. B., Weikert, C., . . . Hu, F. B. (2005). Dietary pattern, inflammation, and incidence of type 2 diabetes in women. Am J Clin Nutr, 82(3), 675-684; quiz 714-675.
[29] U.S. Department of Health and Human Services and U.S. Department of Agriculture (2015). 2015 – 2020 Dietary Guidelines for Americans. 8th Edition. Retrieved from https://health.gov/dietaryguidelines/2015/guidelines/.
[30] Crozier, S. R., Robinson, S. M., Godfrey, K. M., Cooper, C., & Inskip, H. M. (2009). Women's dietary patterns change little from before to during pregnancy. J Nutr, 139(10), 1956-1963. doi:10.3945/jn.109.109579
[31] Olson, C. M. (2005). Tracking of food choices across the transition to motherhood. J Nutr Educ Behav, 37(3), 129-136.
[32] Cuco, G., Fernandez-Ballart, J., Sala, J., Viladrich, C., Iranzo, R., Vila, J., & Arija, V. (2006). Dietary patterns and associated lifestyles in preconception, pregnancy and postpartum. Eur J Clin Nutr, 60(3), 364-371. doi:10.1038/sj.ejcn.1602324

- A wide range of methods (sometimes using the same nomenclature) was used to define and assess dietary patterns, which made it difficult to compare and contrast results across studies. Journal editors and peer-reviewers may be less willing to publish studies that replicate others' findings, which could have resulted in an evidence base with a wide array of dietary patterns. It is important for the editors and peer-reviewers to understand the need for publishing studies that replicate dietary patterns, in addition to publishing studies that assess unique dietary patterns[33].
- There was heterogeneity in terms of when dietary data were assessed. Half of the studies measured diet before pregnancy (2-10 years prior to pregnancy) while the rest assessed diet during pregnancy (with a recall period ranging from 4 days to few months).
- In some studies, the time point of exposure assessment was very close to when the outcome was assessed, even though these studies clarified temporality (2, 9).
- Interaction with BMI was not assessed. Only some studies stratified results by BMI.
- Different criteria (e.g. ADA, IADPSG) were used across studies to define GDM.

Research recommendations

To assess the relationship between dietary patterns before and during pregnancy and risk of GDM more adequately, additional research is needed that should:

- Include diverse populations from the U.S. and elsewhere with varying racial/ethnic and socioeconomic backgrounds.
- Foster collaborative efforts across different regions and populations so that dietary patterns can be more consistently scored, compared and reproduced across studies.
- Develop and validate novel epidemiological tools that can accurately capture the complexity of dietary habits.
- Promote harmonization of research methods across various cohorts and randomized trials, similar to the National Cancer Institute's Dietary Patterns Methods Project[34].
- Adjust for key confounding factors in observational studies, including parity, educational attainment, smoking status, race/ethnicity, maternal age, family poverty income ratio, pre-pregnancy BMI, mean total energy intake, family history of diabetes, previous diagnosis of pre-diabetes and PCOS.
- Improve comparability across studies by increasing the uniformity of 1) timing of dietary assessment, and 2) outcome measured (avoiding self-report).
- Include well-designed and sufficiently powered RCTs.
- Include and assess effect measure modification by pre-pregnancy BMI and fetal sex.

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[33] U.S. Department of Health and Human Services and U.S. Department of Agriculture. (2015). *2015 – 2020 Dietary Guidelines for Americans. 8th Edition.* Retrieved from https://health.gov/dietaryguidelines/2015/guidelines/.

[34] Liese, A. D., Krebs-Smith, S. M., Subar, A. F., George, S. M., Harmon, B. E., Neuhouser, M. L., . . . Reedy, J. (2015). The Dietary Patterns Methods Project: synthesis of findings across cohorts and relevance to dietary guidance. J Nutr, 145(3), 393-402. doi:10.3945/jn.114.205336

Included articles

1. Clapp JF, 3rd. Effect of dietary carbohydrate on the glucose and insulin response to mixed caloric intake and exercise in both nonpregnant and pregnant women. Diabetes Care 1998;21 Suppl 2:B107-12.

2. He JR, Yuan MY, Chen NN, Lu JH, Hu CY, Mai WB, Zhang RF, Pan YH, Qiu L, Wu YF, et al. Maternal dietary patterns and gestational diabetes mellitus: a large prospective cohort study in China. Br J Nutr 2015;113(8):1292-300.

3. Karamanos B, Thanopoulou A, Anastasiou E, Assaad-Khalil S, Albache N, Bachaoui M, Slama CB, El Ghomari H, Jotic A, Lalic N, et al. Relation of the Mediterranean diet with the incidence of gestational diabetes. Eur J Clin Nutr 2014;68(1):8-13.

4. Radesky JS, Oken E, Rifas-Shiman SL, Kleinman KP, Rich-Edwards JW, Gillman MW. Diet during early pregnancy and development of gestational diabetes. Paediatr Perinat Epidemiol 2008;22(1):47-59.

5. Rifas-Shiman SL, Rich-Edwards JW, Kleinman KP, Oken E, Gillman MW. Dietary quality during pregnancy varies by maternal characteristics in Project Viva: a US cohort. J Am Diet Assoc 2009;109(6):1004-11.

6. Schoenaker DA, Soedamah-Muthu SS, Callaway LK, Mishra GD. Pre-pregnancy dietary patterns and risk of gestational diabetes mellitus: results from an Australian population-based prospective cohort study. Diabetologia 2015;58(12):2726-35.

7. Schoenaker DA, Soedamah-Muthu SS, Mishra GD. Quantifying the mediating effect of body mass index on the relation between a Mediterranean diet and development of maternal pregnancy complications: the Australian Longitudinal Study on Women's Health. Am J Clin Nutr 2016;104(3):638-45.

8. Tobias DK, Zhang C, Chavarro J, Bowers K, Rich-Edwards J, Rosner B, Mozaffarian D, Hu FB. Prepregnancy adherence to dietary patterns and lower risk of gestational diabetes mellitus. Am J Clin Nutr 2012;96(2):289-95.

9. Tryggvadottir EA, Medek H, Birgisdottir BE, Geirsson RT, Gunnarsdottir I. Association between healthy maternal dietary pattern and risk for gestational diabetes mellitus. Eur J Clin Nutr 2016;70(2):237-42.

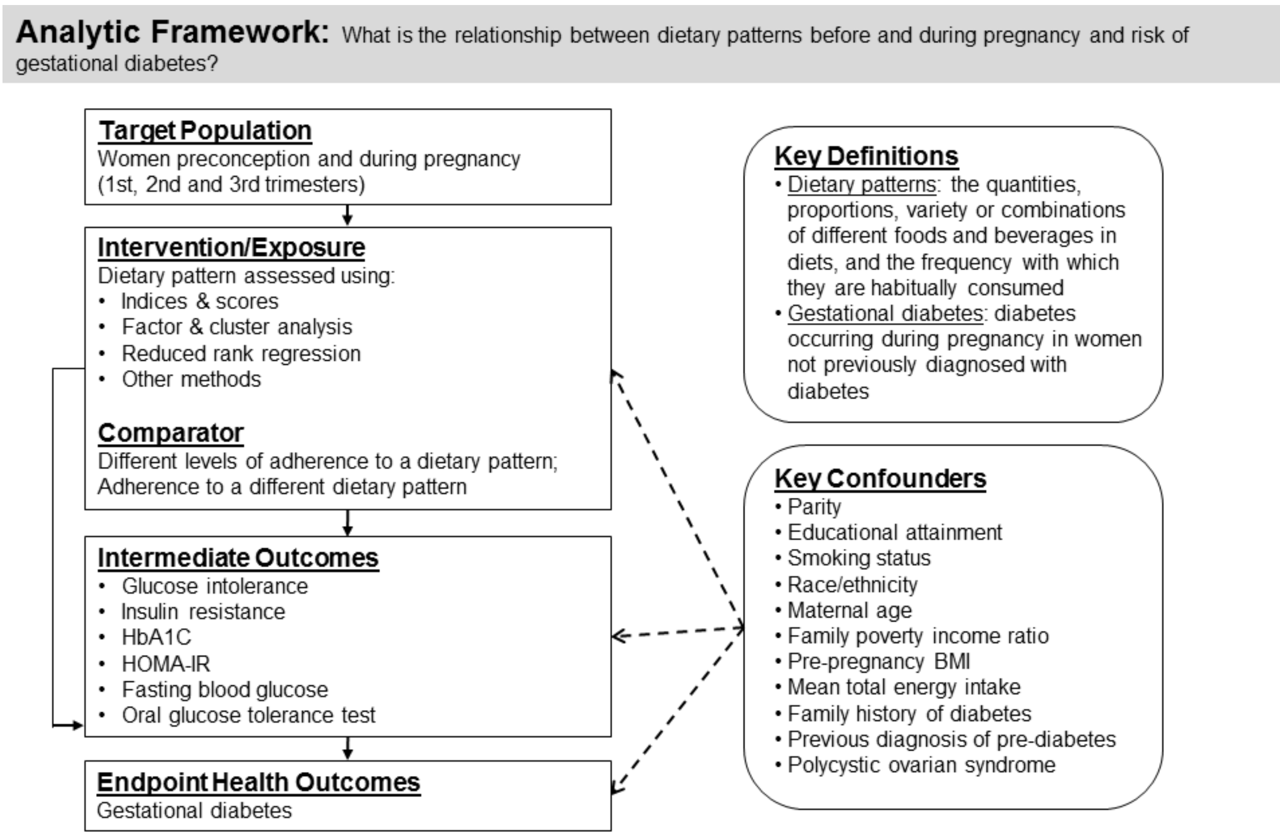
10. Zhang C, Schulze MB, Solomon CG, Hu FB. A prospective study of dietary patterns, meat intake and the risk of gestational diabetes mellitus. Diabetologia 2006;49(11):2604-13.

11. Zhang C, Tobias DK, Chavarro JE, Bao W, Wang D, Ley SH, Hu FB. Adherence to healthy lifestyle and risk of gestational diabetes mellitus: prospective cohort study. BMJ 2014;349:g5450.

ANALYTIC FRAMEWORK

The analytic framework (Figure 1) illustrates the overall scope of the systematic review, including the population, the interventions and/or exposures, comparators, and outcomes of interest. It also includes definitions of key terms and identifies key confounders considered in the systematic review. This is the analytic framework for the systematic review conducted to examine the relationship between dietary patterns before and during pregnancy and risk of gestational diabetes mellitus.

Figure 1: Analytic framework



SEARCH PLAN AND RESULTS

Inclusion and exclusion criteria

The inclusion and exclusion criteria are a set of characteristics to determine which studies will be included or excluded in the systematic review. Table 6 provides the inclusion and exclusion criteria for the systematic review question(s): What is the relationship between dietary patterns before and during pregnancy and risk of gestational diabetes mellitus?

Table 6. Inclusion and exclusion criteria

Category	Inclusion Criteria	Exclusion Criteria
Study Design	• Randomized controlled trials • Prospective cohort studies • Retrospective cohort studies • Nested case-control studies	• Non-randomized controlled trials • Cross-sectional studies • Case-control studies • Uncontrolled studies • Pre/post studies with a control • Pre/post studies without a control • Narrative reviews • Systematic reviews • Meta-analyses

Exposure/ Intervention	• Studies that provide a description of the dietary pattern(s) (i.e., foods and beverages) consumed by subjects and that methodologically use:
	  ○ Indices & scores
	  ○ Cluster or factor analysis
	  ○ Reduced rank regression
	  ○ Other methods
		• Studies that <u>do not</u> provide a description of the dietary pattern(s) (i.e., foods and beverages) consumed by subjects[35]

Comparator	• Different levels of adherence to a dietary pattern • Adherence to a different dietary pattern	

[35] For example, a study would be excluded from the systematic review if the dietary pattern were labeled “vegetarian” but lacked a description of what foods/beverages were consumed as part of that dietary pattern.

Category	Inclusion Criteria	Exclusion Criteria
Date Range	• Studies published in the following date range: 1980-present (search date)	
Language	• Studies published in English	• Studies published in languages other than English
Study Setting	• Studies conducted in Very High and High Human Development Countries* • **Determined using the most recent Human Development Index*	• Studies conducted in Medium and Low Human Development Countries* • **Determined using the most recent Human Development Index*
Study Duration	• Studies regardless of length	
Temporality	• Studies when the exposure was assessed prior to the outcome • Studies when exposure and outcome assessment occurred during overlapping time periods, as long as the study explicitly states that the exposure was assessed prior to the outcome	• Studies when the outcome was assessed prior to the exposure • Studies when exposure and outcome assessment occurred during overlapping time periods and the study does not explicitly state that the exposure was assessed prior to the outcome
Publication Status	• Studies published in peer-reviewed journals	• Grey literature, including unpublished data, manuscripts, reports, abstracts, conference proceedings
Study Subjects	• Human subjects • Adolescent girls and women capable of becoming pregnant (15-44 years) • Pregnant girls and women (15-44 years) – single and multiple pregnancies • Neonates	• Animal and in vitro models • Hospitalized patients, when hospitalization is not related to pregnancy, birth and immediate postpartum • Pregnancies conceived ONLY using Assisted Reproductive Technologies

Category	Inclusion Criteria	Exclusion Criteria
Size of Study Groups	• Studies regardless of group size	
Health Status of Study Subjects	• Studies conducted in generally healthy women of reproductive age, including women in pre/peri-conception and pregnancy • Studies conducted in samples with elevated chronic disease risk or pregnancy related conditions, or that enroll *some* subjects with a disease or with health outcome of interest such as ○ Anemia ○ Gestational diabetes ○ Hypertension ○ Preeclampsia ○ Hyperemesis Gravidarum ○ Previous adverse outcome (e.g., preterm) • Obesity	• Studies that *exclusively* enroll subjects with chronic conditions (e.g. hypertension, diabetes) that are not related to the index pregnancy • Studies that *exclusively* enroll subjects with a disease or with the health outcome of interest (intermediate or endpoint health outcomes) • Studies done in hospitalized or malnourished subjects, if hospitalization is not related to index pregnancy
Outcomes	• Gestational diabetes mellitus • Intermediate Outcomes: ○ Glucose intolerance ○ Insulin resistance ○ HbA1C ○ HOMA-IR ○ Fasting blood glucose • Oral glucose tolerance test	

Search terms and electronic databases used

PubMed, US National Library of Medicine

- Date(s) searched: January 1980 to January 2017
- Search Terms:

pregnancy[mh] OR “Prenatal Exposure Delayed Effects”[mesh] OR “Maternal Exposure”[mesh] OR “pregnant women”[mh] OR pregnan*[tiab] OR prenatal[tiab] OR maternal OR mother* OR postpartum OR newborn*[tiab] OR perinatal OR peri-natal OR pre-conception OR preconception OR peri-conception OR periconception OR "Infant, Newborn"[Mesh] OR neonat*[tiab] OR newly born* OR "Peripartum Period"[Mesh] OR peripartum[tiab] OR peri-partum[tiab] OR gestation* OR natal OR puerperium[tiab] OR "Maternal Nutritional Physiological Phenomena"[Mesh]

AND

hypertensi*[tiab] OR "Hypertension"[Mesh:NoExp] OR vomit* OR diabetes*[tiab] OR diabetic*[tiab] OR "Birth Weight"[Mesh] OR "Birth Weight"[tiab] OR "Glucose Intolerance"[Mesh] OR Glucose Intoleran*[tiab] OR glucose toleran* OR "Insulin Resistance"[Mesh] OR Insulin Resistan*[tiab] OR Dysglycemia[tiab] OR fasting blood glucose* OR "Hemoglobin A, Glycosylated"[Mesh] OR "Proteinuria"[Mesh:noexp] OR Albuminuria OR "Blood Pressure"[mh] OR “blood pressure”[tiab]

OR
"Diabetes, Gestational"[Mesh] OR (gestation*[tiab] AND (diabetes*[tiab] OR diabetic*[tiab])) OR "Pre-Eclampsia"[Mesh] OR "Pre-Eclampsia"[tiab] OR preeclampsia[tiab] OR "Hypertension, Pregnancy-Induced"[Mesh] OR Eclampsia OR "Gestational Age"[Mesh] OR "Morning Sickness"[Mesh] OR (Hyperemesis Gravidarum) OR "Gestational Age"[tiab] OR "Obstetric Labor, Premature"[Mesh] OR ((prematur*[tiab] OR preterm [tiab]) AND (baby[tiab] OR infant*[tiab] OR birth OR labor OR membrane* OR babies)) OR "Fetal Growth Retardation"[Mesh] OR IUGR[tiab] OR “Intrauterine growth restriction” OR "Fetal Development"[Mesh:noexp] OR "Fetal Weight"[Mesh] OR "Umbilical Arteries"[Mesh] OR "Uterine Artery"[Mesh]

AND
(“diet quality” OR dietary pattern* OR diet pattern* OR eating pattern* OR food pattern* OR eating habit* OR dietary habit* OR food habit* OR dietary profile* OR food profile* OR diet profile* OR eating profile* OR dietary guideline* OR dietary recommendation* OR eating style*) OR

(DASH[ti] OR DASH[tw] OR ("dietary approaches"[ti] AND hypertension[ti]) OR "Diet, Mediterranean"[Mesh] OR Mediterranean[ti] OR vegan* OR vegetarian* OR "Diet, Vegetarian"[Mesh] OR “prudent diet” OR “western diet” OR nordiet OR omni[ti] OR omniheart[tiab] OR (Optimal Macronutrient Intake Trial to Prevent Heart Disease) OR adventist* OR ((Okinawa* OR "Ethnic Groups"[Mesh] OR “plant based” OR Mediterranean[tiab] OR Nordic[tiab] OR "heart healthy"[tiab] OR indo-mediterranean) AND (diet[mh] OR diet[tiab] OR diets[tiab] OR food[mh]))) OR

("Guideline Adherence"[Mesh] AND (diet OR food OR eating OR eat OR dietary OR feeding OR nutrition OR nutrient*)) OR (adherence AND (nutrient* OR nutrition OR diet OR dietary OR food OR eat OR eating) AND (guideline* OR guidance OR recommendation*)) OR

(dietary score* OR adequacy index* OR kidmed OR Diet Quality Index* OR Food Score* OR Diet Score* OR MedDietScore OR Dietary Pattern Score* OR “healthy eating index”) OR

((index*[ti] OR score*[ti] OR indexes OR scoring[ti] OR indices[ti]) AND (dietary[ti] OR nutrient*[ti] OR eating[tiab] OR food[ti] OR food[mh] OR diet[ti] OR diet[mh]) AND (pattern* OR habit* OR profile*)) OR meals[mh] OR meals[tiab] OR meal[tiab] OR mealtime*[tiab]

OR

diet[mh:noexp] OR diet[ti] OR diets[ti] OR food*[tiab] OR "Food"[mh:noexp] OR "Eating"[mh] OR dietary intake*[tiab] OR food intake*[tiab] OR food habits[mh] OR diet habit*[tiab] OR eating habit*[tiab] OR food choice*[tiab] OR dietary choice*[tiab] OR dietary change*[tiab] NOT (editorial[ptyp] OR comment[ptyp] OR news[ptyp] OR letter[ptyp] OR review[ptyp] OR systematic[sb])

Embase, Elsevier:

- Date(s) searched: January 1980 to January 2017
- Search Terms:

  'pregnancy'/exp OR 'pregnant woman'/exp OR 'prenatal period'/exp OR 'mother'/exp OR 'prenatal exposure'/exp OR 'prenatal growth'/exp OR 'puerperium'/exp OR 'newborn'/exp OR prematurity/exp OR pregnan*:ti,ab OR maternal:ti,ab OR mother*:ti,ab OR prenatal:ti,ab OR pre-natal:ti,ab OR 'puerperium':ti,ab OR postpartum:ti,ab OR newborn:ti,ab OR neonat*:ti,ab OR “newly born”:ti,ab OR periconception:ti,ab OR peri-conception:ti,ab OR pre-conception:ti,ab OR preconception;ti,ab OR gestation* OR peripartum:ti,ab OR peri-partum:ti,ab OR natal:ti,ab OR gestation* OR 'perinatal development'/exp OR 'perinatal care'/de OR perinatal:ti,ab OR peri-natal:ti,ab OR 'puerperium'/de OR 'puerperium':ti,ab OR 'maternal nutrition'/exp

  AND

  hypertensi* OR hyperemesis:ti,ab OR vomit*:ti,ab OR diabet* OR 'birth weight'/exp OR birthweight:ti,ab OR ((neonatal OR newborn) NEAR/3 weight)

  OR

  'glucose intolerance'/exp OR (Glucose NEAR/2 Intoleran*) OR (glucose NEAR/2 toleran*) OR 'insulin resistance'/exp OR (Insulin NEAR/1 Resistan*):ti,ab OR Dysglycemia OR “fasting blood glucose” OR 'hemoglobin A1c'/exp OR 'hemoglobin A1c' OR 'proteinuria'/exp OR albuminuria OR "Blood Pressure"/de

  OR

  'pregnancy diabetes mellitus'/exp OR “diabetes mellitus gravidarum”:ti,ab OR 'eclampsia OR preeclampsia'/exp OR eclampsia:ti,ab OR preeclampsia:ti,ab OR pre-eclampsia:ti,ab OR 'maternal hypertension'/exp OR 'gestational age'/exp OR 'small for date infant'/exp OR 'gestational age' OR 'hyperemesis gravidarum'/exp OR 'morning sickness'/exp OR (gestation* NEAR/2 diabet*):ti,ab OR (Obstetric NEAR/3 (Labor OR labour)) OR (labor/exp AND obstetric*) OR 'prematurity'/exp OR ((prematur* OR preterm) NEAR/3 (baby OR infant* OR babies OR birth OR childbirth OR labor OR membrane*)) OR 'intrauterine growth retardation'/de OR IUGR:ti,ab OR "Intrauterine growth restriction" OR 'fetus growth'/exp OR 'fetus development'/exp OR 'fetus weight'/exp OR 'umbilical artery'/exp OR 'uterine artery'/exp OR ((fetal OR fetus OR foetal OR foetus OR embryo*) NEAR/3 (weight OR develop* OR growth)):ti,ab

AND

'eating habit'/exp OR 'Mediterranean diet'/exp OR nordiet:ti,ab OR 'nordic diet':ti,ab OR DASH:ti,ab OR 'dietary approaches to stop hypertension':ti,ab OR vegan*:ab,ti OR vegetarian*:ab,ti OR 'vegetarian diet'/exp OR 'vegetarian'/exp OR 'prudent diet':ti,ab OR 'western diet':ti,ab OR 'Western diet'/exp OR meal/de OR omniheart:ti,ab OR omni:ti OR 'plant based diet' OR ((eating OR food OR diet* OR calori*) NEAR/3 (pattern? OR habit? OR profile? OR recommendation? OR guideline? OR style* OR choice* OR intake OR quality)) OR (('ethnic, racial and religious groups'/exp OR Okinawa* OR adventist* OR 'mediterranean') AND (diet/exp OR eating/exp OR 'food intake'/de OR calori* OR diet* OR food OR eating))

OR

Diet/de OR 'dietary intake'/de OR 'food preference'/de OR 'food intake'/de OR 'diet restriction'/exp OR 'eating habit'/exp OR diet*:ti OR kidmed:ab,ti OR 'meddietscore':ab,ti OR 'healthy eating index':ab,ti OR ((index OR score OR scoring OR indices) NEAR/3 (diet* OR eating OR food)) OR "food consumption"

OR

food*:ti,ab OR "Food"/de OR Eating:ti,ab OR (dietary NEAR/1 change*):ti,ab OR Meal*:ti,ab

Cochrane, Central Register of Controlled Trials, John Wiley & Sons:

- Date(s) searched: January 1980 to January 2017
- Search Terms:

  [mh pregnancy] OR [mh "Maternal Exposure"] OR [mh "Prenatal Exposure Delayed Effects"] OR [mh "pregnant women"] OR pregnan*:ti,ab OR prenatal OR maternal OR mother* OR postpartum OR newborn*:ti,ab OR perinatal OR peri-natal OR pre-conception OR preconception OR peri-conception OR periconception OR [mh "Infant, Newborn"] OR neonat*:ti,ab OR (newly NEAR/1 born*) OR gestation* OR peripartum OR peri-partum OR natal:ti,ab OR puerperium OR gravidarum OR [mh "Peripartum Period"] OR peripartum:ti,ab

OR peri-partum:ti,ab OR natal OR puerperium:ti,ab OR [mh "Maternal Nutritional Physiological Phenomena”]

AND

(hypertensi*:ti,ab OR [mh ^Hypertension] OR vomit*:ti,ab OR diabet*:ti,ab OR [mh "Birth Weight"] OR "Birth Weight":ti,ab OR [mh "Glucose Intolerance"] OR (Glucose NEAR/1 Intoleran*) OR (glucose NEAR/1 toleran*) OR [mh "Insulin Resistance"] OR (Insulin NEAR/1 Resistan*:ti,ab) OR Dysglycemia:ti,ab OR “fasting blood glucose” OR [mh "Hemoglobin A, Glycosylated"] OR [mh ^"Proteinuria"] OR Albuminuria OR [mh "Blood Pressure"] OR “blood pressure”:ti,ab)

OR

[mh "Diabetes, Gestational"] OR (gestation* NEAR/1 diabet*) OR [mh "Pre-Eclampsia"] OR "Pre-Eclampsia":ti,ab OR preeclampsia:ti,ab OR [mh "Hypertension, Pregnancy-Induced"] OR Eclampsia OR [mh "Gestational Age"] OR [mh "Morning Sickness"] OR (Hyperemesis NEAR/3 Gravidarum) OR "Gestational Age":ti,ab OR [mh "Birth Weight"] OR "Birth Weight":ti,ab OR ((neonatal OR newborn) NEAR/3 weight) OR [mh "Obstetric Labor, Premature"] OR ((prematur*:ti,ab OR preterm:ti,ab) AND (baby:ti,ab OR infant*:ti,ab OR birth OR labor OR membrane* OR babies)) OR [mh "Fetal Growth Retardation"] OR IUGR:ti,ab OR “Intrauterine growth restriction” OR [mh ^"Fetal Development"] OR [mh "Fetal Weight"] OR [mh "Umbilical Arteries"] OR [mh "Uterine Artery"]

AND (diet:ti OR diets:ti OR dietary:ti OR meal*:ti,ab OR “prudent diet” OR nordiet:ti,ab OR omniheart OR "Optimal Macronutrient Intake Trial to Prevent Heart Disease" OR ((Index OR score OR indices OR scoring) NEAR/3 (dietary OR diet OR food OR eating)) OR “adequacy index” OR kidmed OR MedDietScore)

OR ‘dietary approaches to stop hypertension’:ti,ab OR omniheart:ti,ab OR omni:ti OR ‘plant based diet’ OR ((eating OR food OR diet* OR calori*) NEAR/3 (pattern? OR habit? OR profile? OR recommendation? OR guideline? OR style* OR choice* OR intake OR quality))

OR

food*:ti,ab OR Eating:ti,ab OR (dietary NEAR/1 change*):ti,ab OR DASH:ti,ab OR vegan*:ab,ti OR vegetarian*:ab,ti OR omni:ti OR ((ethni* OR racial OR religio* OR asia* OR western OR Okinawa* OR adventist* OR ‘mediterranean' OR Nordic* OR indo-mediterranean) NEAR/3 (calori* OR diet* OR food OR eating))

OR [mh "Diet, Mediterranean"] OR [mh "Diet, Vegetarian"] OR ([mh "Ethnic Groups"] AND ([mh diet] OR diet*:ti,ab OR [mh ^food] OR eat:ti,ab OR eating:ti,ab OR [mh "Eating"] OR [mh “food habits”])) OR

([mh "Guideline Adherence"] AND (diet OR food OR eating OR eat OR dietary)) OR ((adhere* OR adhering) AND (diet OR dietary OR food OR eat OR eating) AND (guideline* OR guidance OR recommendation*)) OR [mh meals] OR [mh ^diet] OR diet*:ti,ab OR [mh ^"Food"] OR [mh "Eating"] OR [mh “food habits”]

CINAHL (Plus) with Full Text, EBSCO (Cumulative Index to Nursing and Allied Health Literature):

- Date(s) searched: January 1980 to January 2017
- Search Terms:

(MH "Food and Beverages") OR (MH "Food") OR (MH "Diet") OR (MH "Eating") OR (MH "Eating Behavior") OR (MH "Meals+") OR (MH "Food Preferences") OR (MH "Food Habits") OR (MH "Mediterranean Diet") OR (MH "Diet, Western") OR (MH "DASH Diet") OR (MH "Vegetarianism")

OR meal* OR “prudent diet” OR nordiet OR omniheart OR "Optimal Macronutrient Intake Trial to Prevent Heart Disease" OR ((Index OR score OR indices OR scoring) N3 (dietary OR diet OR food OR eating)) OR “adequacy index” OR kidmed OR MedDietScore

OR “dietary approaches to stop hypertension” OR “plant based diet” OR ((eating OR food* OR diet* OR calori*) N3 (pattern? OR habit? OR profile? OR recommendation? OR guideline? OR style* OR choice* OR intake OR quality))

OR

(dietary NEAR/1 change*) OR vegan* OR vegetarian* OR ((ethni* OR racial OR religio* OR asia* OR western OR Okinawa* OR adventist* OR ‘mediterranean' OR Nordic* OR indo-mediterranean OR omni*) N3 (calori* OR diet* OR food OR eating))

OR (MH "Ethnic Groups+") AND ((mh diet) OR diet* OR (MH food) OR eat OR eating OR (MH "Eating") OR MH “food habits”)) OR

((adhere* OR adhering) N3 (diet OR dietary OR food OR eat OR eating)) AND (guideline* OR guidance OR recommendation*))

(MH "Maternal Nutritional Physiology+") OR (MH "Maternal Exposure") OR (MH "Pregnancy+") OR (MH "Pregnancy in Adolescence+") OR (MH "Maternal Age 14 and Under") OR (MH "Pregnancy Outcomes") OR (MH "Mothers+") OR (MH "Prenatal Nutritional Physiology") OR (MH "Infant, Newborn+") OR (MH "Postnatal Period+") OR (MH "Periconceptual Period")

AND

(MH "Hypertension+") OR (MH "Nausea and Vomiting+") OR (MH "Vomiting+") OR (MH "Birth Weight") OR (MH "Glucose Tolerance Test") OR (MH "Prediabetic State") OR (MH "Glucose Intolerance") OR (MH "Insulin Resistance+") OR (MH "Blood Pressure+") OR (MH "Proteinuria+") OR (MH "Hemoglobin A, Glycosylated")

OR

(MH "Diabetes Mellitus, Gestational") OR (MH "Gestational Age") OR (MH "Pre-Eclampsia+") OR (MH "Eclampsia+") OR (MH "Fetal Growth Retardation") OR (MH "Fetal Weight") OR (MH "Umbilical Arteries") OR (MH "Delivery, Obstetric+")

Limiters - Published Date: 19800101-; Peer Reviewed; English Language; Exclude MEDLINE records; Pregnancy

Narrow by SubjectMajor: - energy intake

Narrow by SubjectMajor: - vegetarianism

Narrow by SubjectMajor: - women's health

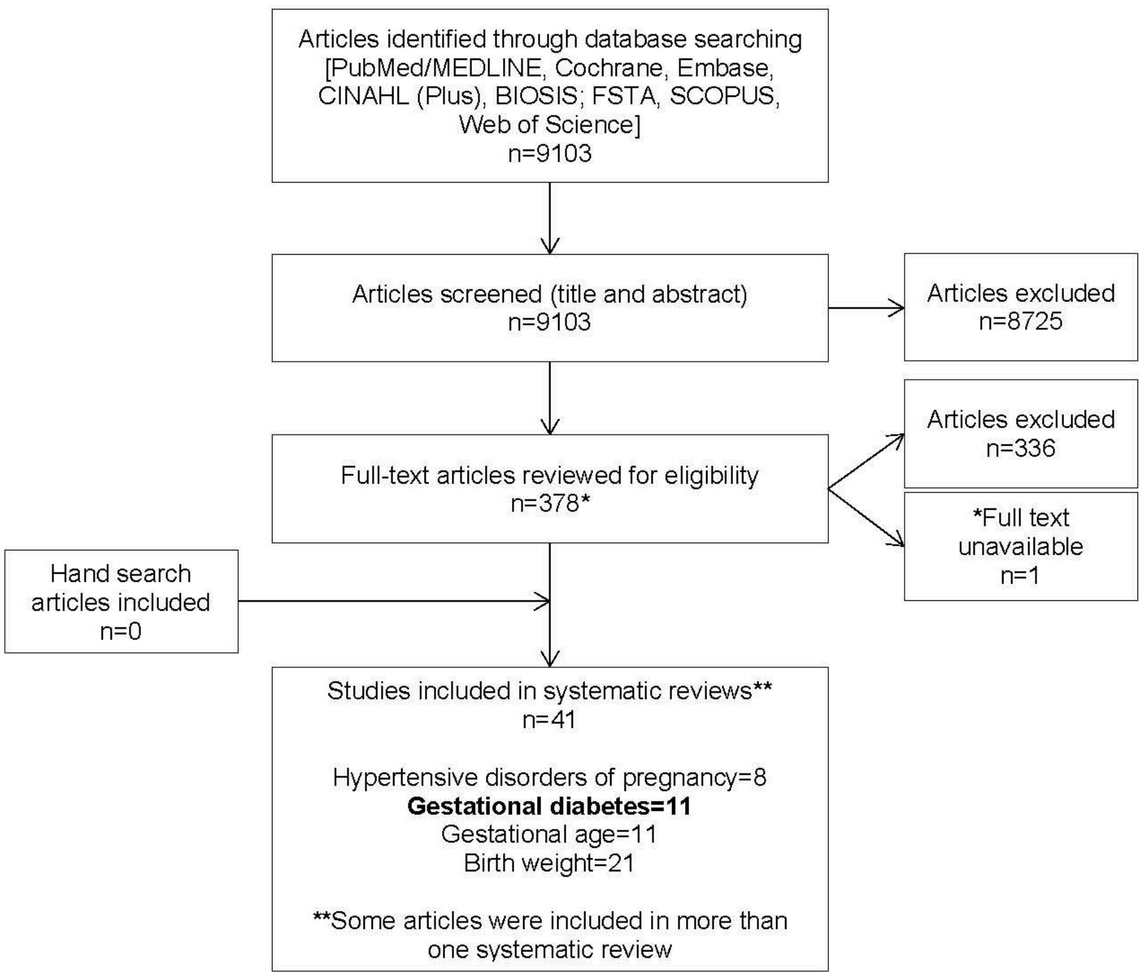
Narrow by SubjectMajor: - pregnancy outcomes

Narrow by SubjectMajor: - pregnancy complications

Narrow by SubjectMajor: - food habits

Narrow by SubjectMajor: - diabetes mellitus, gestational

Figure 2: Flow chart of literature search and screening results



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The table below lists the excluded articles with at least one reason for exclusion, and may not reflect all possible reasons.

Table 7. Excluded citations

	Citation	Rationale
1	Aaltonen, J, Ojala, T, Laitinen, K et al. Risk Reduction of Infant Insulin Resistance by Dietary Intervention during Pregnancy and Breastfeeding. Pediatric Academic Societies Annual Meeting; 2009 May 2 5; Baltimore MD, United States, 2009	Dependent variable
2	Abel, Ht, Bannert, N, Starke, I et al. Study into Ca/P homeostasis in premature babies on different diets. Klin Padiatr, 1991, 203	Independent variable
3	Adami, G. F., Friedman, D., Cuneo, S. et al. Intravenous nutritional support in pregnancy. Experience following biliopancreatic diversion. Clinical Nutrition, 1992, 11: 106-109	Independent variable
4	Akbari, Z., Mansourian, M., Kelishadi, R. Relationship of the intake of different food groups by pregnant mothers with the birth weight and gestational age: Need for public and individual educational programs. J Educ Health Promot, 2015, 4. PMID:25883993.	Independent variable
5	Alfonso, H. Preventing preeclampsia: the evidence on nutrients. Nurs Womens Health, 2009, 13: 419-21. PMID:19821918.	Study design
6	Ali, H. I., Jarrar, A. H., El Sadig, M. et al. Diet and carbohydrate food knowledge of multi-ethnic women: a comparative analysis of pregnant women with and without Gestational Diabetes Mellitus. PLoS One, 2013, 8. PMID:24069200.	Study design
7	Alwan, N. A., Greenwood, D. C., Simpson, N. A. et al. Dietary iron intake during early pregnancy and birth outcomes in a cohort of British women. Hum Reprod, 2011, 26: 911-9. PMID:21303776.	Independent variable
8	Andreasyan, K., Ponsonby, A. L., Dwyer, T. et al. Higher maternal dietary protein intake in late pregnancy is associated with a lower infant ponderal index at birth. Eur J Clin Nutr, 2007, 61: 498-508. PMID:17136041.	Independent variable
9	Arkkola, T., Uusitalo, U., Kronberg-Kippila, C. et al. Seven distinct dietary patterns identified among pregnant Finnish women--associations with nutrient intake and sociodemographic factors. Public Health Nutr, 2008, 11: 176-82. PMID:17610760.	Dependent variable

	Citation	Rationale
10	Asaka, A., Imaizumi, Y., Inouye, E. Analysis of multiple births in Japan. V. Effects of gestational age, maternal age and other factors on growth rate of weight in twins. Jinrui Idengaku Zasshi, 1981, 26: 83-90. PMID:7328851.	Independent variable
11	Asbee, Sm, Jenkins, Tr, Butler, Jr et al. Dietary counseling prevents excessive weight gain during pregnancy, a randomized controlled trial. Obstet Gynecol, 2008, 111	Dependent variable
12	Asp, N. G. Nutrition and human development. Scandinavian Journal of Food and Nutrition, 2006, 50	Independent variable, study design
13	Babson, Sg, Bramhall, Jl. Diet and growth in the premature infant. Journal of Pediatrics, 1969, 74: 890-900	Date
14	Bakouei, S., Reisian, F., Lamyian, M. et al. High Intake of Manganese During Second Trimester, Increases the Risk of Preterm Delivery: A Large Scale Cohort Study. Glob J Health Sci, 2015, 7: 226-32. PMID:26156900.	Independent variable
15	Bao, W., Bowers, K., Tobias, D. K. et al. Prepregnancy low-carbohydrate dietary pattern and risk of gestational diabetes mellitus: a prospective cohort study. Am J Clin Nutr, 2014, 99: 1378-84. PMID:24717341.	Independent variable
16	Bao, W., Li, S., Chavarro, J. E. et al. Low Carbohydrate-Diet Scores and Long-term Risk of Type 2 Diabetes Among Women With a History of Gestational Diabetes Mellitus: A Prospective Cohort Study. Diabetes Care, 2016, 39: 43-9. PMID:26577416.	Dependent variable
17	Bao, W., Tobias, D. K., Hu, F. B. et al. Pre-pregnancy potato consumption and risk of gestational diabetes mellitus: prospective cohort study. Bmj, 2016, 352. PMID:26759275.	Independent variable
18	Bao, W., Tobias, D. K., Olsen, S. F. et al. Pre-pregnancy fried food consumption and the risk of gestational diabetes mellitus: a prospective cohort study. Diabetologia, 2014, 57: 2485-91. PMID:25303998.	Independent variable
19	Baron, R., Te Velde, S. J., Heymans, M. W. et al. The Relationships of Health Behaviour and Psychological Characteristics with Spontaneous Preterm Birth in Nulliparous Women. Matern Child Health J, 2016, . PMID:27581004.	Independent variable
20	Bell, E. H., Geyer, J., Jones, L. A structured intervention improves breastfeeding success for ill or preterm infants. MCN Am J Matern Child Nurs, 1995, 20: 309-14. PMID:8551932.	Dependent variable
21	Berntorp, K. E. Gestational diabetes: what’s up?. Diabetologia, 2016, 59: 1382-1384	Study design

	Citation	Rationale
22	Bertolotto, A., Volpe, L., Calianno, A. et al. Physical activity and dietary habits during pregnancy: effects on glucose tolerance. J Matern Fetal Neonatal Med, 2010, 23: 1310-4. PMID:20334531.	Independent variable, study design
23	Bhatia, B. D., Banerjee, D., Agarwal, D. K. et al. Fetal growth: relationship with maternal dietary intakes. Indian J Pediatr, 1983, 50: 113-20. PMID:6618569.	Country
24	Bjerregaard, P., Hansen, J. C. Effects of smoking and marine diet on birthweight in Greenland. Arctic Med Res, 1996, 55: 156-64. PMID:9115541.	Independent variable
25	Bloomfield, F. H., Oliver, M. H., Hawkins, P. et al. A periconceptional nutritional origin for noninfectious preterm birth. Science, 2003, 300. PMID:12714735.	Independent variable, health status
26	Bo, S., Rosato, R., Ciccone, G. et al. Simple lifestyle recommendations and the outcomes of gestational diabetes. A 2 x 2 factorial randomized trial. Diabetes Obes Metab, 2014, 16: 1032-5. PMID:24646172.	Independent variable, health status
27	Bobinski, R., Mikulska, M., Mojska, H. et al. Assessment of the diet components of pregnant women as predictors of risk of preterm birth and born baby with low birth weight. Ginekol Pol, 2015, 86: 292-9. PMID:26117989.	Independent variable, study design
28	Bobinski, R., Mikulska, M., Mojska, H. et al. The Dietary Composition of Women Who Delivered Healthy Full-Term Infants, Preterm Infants, and Full-Term Infants Who Were Small for Gestational Age. Biol Res Nurs, 2015, 17: 495-502. PMID:25358685.	Independent variable, study design
29	Borberg, C., Gillmer, M. D., Brunner, E. J. et al. Obesity in pregnancy: the effect of dietary advice. Diabetes Care, 1980, 3: 476-81. PMID:6993162.	Independent variable
30	Borgen, I., Aamodt, G., Harsem, N. et al. Maternal sugar consumption and risk of preeclampsia in nulliparous Norwegian women. Eur J Clin Nutr, 2012, 66: 920-5. PMID:22713766.	Independent variable
31	Bower, D. The influence of dietary salt intake on pre-eclampsia. Journal of obstetrics and gynaecology of the British Commonwealth, 1961, 63: 123-6	Date
32	Bowers, K., Tobias, D. K., Yeung, E. et al. A prospective study of prepregnancy dietary fat intake and risk of gestational diabetes. Am J Clin Nutr, 2012, 95: 446-53. PMID:22218158.	Independent variable

	Citation	Rationale
33	BrantsÃ¦ter, A. L., Haugen, M., Myhre, R. et al. Diet matters, particularly in pregnancy â€“ Results from MoBa studies of maternal diet and pregnancy outcomes. Norsk Epidemiologi, 2014, 24: 63-77	Study design
34	Brantsaeter, A. L., Myhre, R., Haugen, M. et al. Intake of probiotic food and risk of preeclampsia in primiparous women: the Norwegian Mother and Child Cohort Study. Am J Epidemiol, 2011, 174: 807-15. PMID:21821542.	Independent variable
35	Breslow, S, Belafsky, Ha, Shangold, Je et al. Control of weight gain in pregnancy: double blind study of a dieting aid. Clinical medicine, 1963, 70: 931-8	Date
36	Brooke, O. G. Low birth weight babies. Nutrition and feeding. Br J Hosp Med, 1982, 28: 462-9. PMID:7171896.	Dependent variable
37	Brooke, O. G. Nutrition in the preterm infant. Lancet, 1983, 1: 514-6. PMID:6131220.	Study subjects
38	Brown, J. E., Kahn, E. S., Hartman, T. J. Profet, profits, and proof: do nausea and vomiting of early pregnancy protect women from harmful vegetables?. Am J Obstet Gynecol, 1997, 176: 179-81. PMID:9024110.	Independent variable
39	Brumfield, C. G., Huddleston, J. F. The management of diabetic ketoacidosis in pregnancy. Clin Obstet Gynecol, 1984, 27: 50-9. PMID:6423330.	Independent variable
40	Bruno, R., Petrella, E., Bertarini, V. et al. Adherence to a lifestyle programme in overweight/obese pregnant women and effect on gestational diabetes mellitus: a randomized controlled trial. Matern Child Nutr, 2016, . PMID:27647837.	Independent variable, study design
41	Buchanan, T. A., Kjos, S. L. Diabetes and pregnancy. Curr Ther Endocrinol Metab, 1994, 5: 278-83. PMID:7704732.	Study design
42	Buul, E, Rijpkema, A, Steegers, E et al. Chronic dietary sodium restriction in pregnancy reduces calcium intake. J Perinat Med, 1992, 20	Independent variable
43	Campbell, Dm. Dietary restriction in obesity and its effect on neonatal outcome. Nutrition in Pregnancy. Proceedings of 10th Study Group of the Rcog; 1983; London, UK, 1983, : 243-50	Not peer-reviewed
44	Canda, M. T., Sezer, O., Demir, N. An audit of seafood consumption awareness during pregnancy and its association with maternal and fetal outcomes in a Turkish population. J Obstet Gynaecol, 2011, 31: 293-7. PMID:21534748.	Independent variable

	Citation	Rationale
45	Carmichael, S. L., Yang, W., Shaw, G. M. Maternal dietary nutrient intake and risk of preterm delivery. Am J Perinatol, 2013, 30: 579-88. PMID:23208764.	Independent variable, study design
46	Carter, J. P., Furman, T., Hutcheson, H. R. Preeclampsia and reproductive performance in a community of vegans. South Med J, 1987, 80: 692-7. PMID:3589760.	Independent variable
47	Carver, Jd, Saste, Md, Sosa, R et al. Dietary nucleotide (NT) effects on superior mesenteric artery (SMA) blood flow in preterm infants. Pediatr Res, 2000, 47	Independent variable
48	C'De Baca, J., Lapham, S. C., Skipper, B. J. et al. Use of computer interview data to test associations between risk factors and pregnancy outcomes. Comput Biomed Res, 1997, 30: 232-43. PMID:9281330.	Independent variable
49	Chamberlain, G. Epidemiology and aetiology of the preterm baby. Clin Obstet Gynaecol, 1984, 11: 297-314. PMID:6478726.	Study design
50	Chandler-Laney, P. C., Schneider, C. R., Gower, B. A. et al. Association of late-night carbohydrate intake with glucose tolerance among pregnant African American women. Matern Child Nutr, 2016, 12: 688-98. PMID:25786515.	Independent variable
51	Chavarro, J. E., Halldorsson, T. I., Leth, T. et al. A prospective study of trans fat intake and risk of preeclampsia in Denmark. Eur J Clin Nutr, 2011, 65: 944-51. PMID:21559043.	Independent variable
52	Chen, C. M., Weng, H. C., Li, Y. C. et al. The evaluation of dietary intervention on the blood glucose level of gestational diabetes mellitus pregnant women. Nutritional Sciences Journal, 1999, 24: 250-261	Language
53	Chen, L., Hu, F. B., Yeung, E. et al. Prospective study of pre-gravid sugar-sweetened beverage consumption and the risk of gestational diabetes mellitus. Diabetes Care, 2009, 32: 2236-41. PMID:19940226.	Independent variable
54	Chong, M. F., Chia, A. R., Colega, M. et al. Maternal Protein Intake during Pregnancy Is Not Associated with Offspring Birth Weight in a Multiethnic Asian Population. J Nutr, 2015, 145: 1303-10. PMID:25948786.	Independent variable

	Citation	Rationale
55	Christian, K, Andreas, M, Martin, F. Diet and lifestyle modification in mothers with burnout syndrome: Ayurvedic versus conventional standard counselling-design of a randomised clinical pilot study (VEDA-Trial) [abstract]. European journal of integrative medicine [abstracts of the 5th european congress for integrative medicine; 2012 sept 21-22; flo, 2012, 4: 47-8	Dependent variable
56	Clapp, J. F. Effects of Diet and Exercise on Insulin Resistance during Pregnancy. Metab Syndr Relat Disord, 2006, 4: 84-90. PMID:18370754.	Study design
57	Clausen, T., Slott, M., Solvoll, K. et al. High intake of energy, sucrose, and polyunsaturated fatty acids is associated with increased risk of preeclampsia. Am J Obstet Gynecol, 2001, 185: 451-8. PMID:11518908.	Independent variable
58	Coelho Nde, L., Cunha, D. B., Esteves, A. P. et al. Dietary patterns in pregnancy and birth weight. Rev Saude Publica, 2015, 49. PMID:26398873.	Study design
59	Cooney, G. Food for thought. Midwives, 2008, 11: 30-1. PMID:24902215.	Study design
60	Cooper, M. L. Stories to learn from: toxemia in pregnancy. Midwifery Today Int Midwife, 2014, : 18-21. PMID:25980103.	Not peer-reviewed
61	Corbett, M. A., Burst, H. V. Nutritional intervention in pregnancy. J Nurse Midwifery, 1983, 28: 23-9. PMID:6554311.	Study design, independent variable
62	Cosgrove, M., Davies, D. P. Poor diet in pregnancy may be a proxy for some other hostile influence on fetal growth [8]. Br Med J, 1996, 312: 1478-1479	Independent variable, study design
63	Costa-Orvay, Ja, Figueras-Aloy, J, Romera, G et al. The effects of varying protein and energy intakes on the growth and body composition of very low birth weight infants. Nutr J, 2011, 10	Independent variable
64	Crozier, S. R., Inskip, H. M., Godfrey, K. M. et al. Nausea and vomiting in early pregnancy: Effects on food intake and diet quality. Matern Child Nutr, 2016, . PMID:27896913.	Dependent variable
65	Dancause, K. N., Mutran, D., Elgbeili, G. et al. Dietary change mediates relationships between stress during pregnancy and infant head circumference measures: the QF2011 study. Matern Child Nutr, 2016, . PMID:27562643.	Independent variable

	Citation	Rationale
66	Darling, A. M., Mitchell, A. A., Werler, M. M. Preconceptional Iron Intake and Gestational Diabetes Mellitus. Int J Environ Res Public Health, 2016, 13. PMID:27231921.	Independent variable
67	Davidson, J. K. Newer approaches to diet management of diabetes: calorie control. Med Times, 1980, 108: 35-40. PMID:7374404.	Study design
68	Davies, W. E., Hopkins, P. C., Rose, S. J. et al. The influence of different taurine diets on hearing development in normal babies. A preliminary report. Adv Exp Med Biol, 1996, 403: 631-7. PMID:8915404.	Independent variable
69	Davison, J. M., Lindheimer, M. D. Pregnancy in renal transplant recipients. J Reprod Med, 1982, 27: 613-21. PMID:6757420.	Health status
70	Dawn, Cs. Effects of substandard prenatal diet and nutrition on the development and incidence of pre-eclampsia of pregnancy. J Obstet Gynaecol India, 1961, 12: 237-45	Date
71	de Seymour, J., Chia, A., Colega, M. et al. Maternal Dietary Patterns and Gestational Diabetes Mellitus in a Multi-Ethnic Asian Cohort: The GUSTO Study. Nutrients, 2016, 8. PMID:27657116.	Study design
72	Deka, D., Sharma, N. Nutrition in pregnancy and lactation. Perinatology, 2005, 7: 1-15	Study design
73	Delemarre, F. M., van Leest, L. A., Jongsma, H. W. et al. Effect of low-sodium diet on uteroplacental circulation. J Matern Fetal Med, 2000, 9: 197-200. PMID:11048827.	Independent variable
74	Demmelmair, H, Klingler, M, Campoy, C et al. The influence of habitual diet and increased docosahexaenoic acid intake during pregnancy on the fatty acid composition of individual placental lipids [Study design]. J Pediatr Gastroenterol Nutr, 2005, 40: 622-3	Study design
75	Deveer, R., Deveer, M., Akbaba, E. et al. The effect of diet on pregnancy outcomes among pregnant with abnormal glucose challenge test. Eur Rev Med Pharmacol Sci, 2013, 17: 1258-61. PMID:23690197.	Independent variable
76	Dieckmann, Wj, Davis, Me, Rynkiewicz, Lm et al. Does the administration of diethylstilbestrol during pregnancy have therapeutic value?. Am J Obstet Gynecol, 1953, 66: 1062-75	Date
77	Diet & nutrition. Good news: caffeine in pregnancy doesn't affect the baby's growth..and folic acid seems to prevent cleft lip. Child Health Alert, 2007, 25: 5-6. PMID:17443983.	Not peer-reviewed

	Citation	Rationale
78	Dodd, J. M., Deussen, A. R., Mohamad, I. et al. The effect of antenatal lifestyle advice for women who are overweight or obese on secondary measures of neonatal body composition: The LIMIT randomised trial. BJOG: An International Journal of Obstetrics and Gynaecology, 2016, 123: 244-253	Independent variable
79	Dodd, J. M., McPhee, A. J., Turnbull, D. et al. The effects of antenatal dietary and lifestyle advice for women who are overweight or obese on neonatal health outcomes: the LIMIT randomised trial. BMC Med, 2014, 12. PMID:25315325.	Independent variable
80	Dominguez, L. J., Martinez-Gonzalez, M. A., Basterra-Gortari, F. J. et al. Fast food consumption and gestational diabetes incidence in the SUN project. PLoS One, 2014, 9. PMID:25215961.	Independent variable
81	Donnelly, J, Horan, M, Walsh, J et al. Impact of a Low GI Diet on Neonatal Body Composition [ROLO Kids]. Pediatric Academic Societies Annual Meeting, 2013,	Not peer-reviewed
82	Donnelly, J. M., Walsh, J. M., Byrne, J. et al. Impact of maternal diet on neonatal anthropometry: a randomized controlled trial. Pediatr Obes, 2015, 10: 52-6. PMID:24443392.	Independent variable
83	Doyle, W. Maternal nutrition and low birth weight. J Fam Health Care, 2002, 12. PMID:12630147.	Study design
84	Doyle, W., Crawford, M. A., Wynn, A. H. A. et al. Maternal nutrient intake and birth-weight. Journal of Human Nutrition and Dietetics, 1989, 2: 415-422	Independent variable
85	Drake, A. J., McPherson, R. C., Godfrey, K. M. et al. An unbalanced maternal diet in pregnancy associates with offspring epigenetic changes in genes controlling glucocorticoid action and foetal growth. Clin Endocrinol (Oxf), 2012, 77: 808-15. PMID:22642564.	Dependent variable
86	Drouillet, P., Kaminski, M., De Lauzon-Guillain, B. et al. Association between maternal seafood consumption before pregnancy and fetal growth: evidence for an association in overweight women. The EDEN mother-child cohort. Paediatr Perinat Epidemiol, 2009, 23: 76-86. PMID:19228317.	Independent variable
87	Dubois, S., Coulombe, C., Pencharz, P. et al. Ability of the Higgins Nutrition Intervention Program to improve adolescent pregnancy outcome. J Am Diet Assoc, 1997, 97: 871-8. PMID:9259709.	Independent variable
88	Dunn, C., Kolasa, K., Dunn, P. C. et al. Dietary intake of pregnant adolescents in a rural southern community. J Am Diet Assoc, 1994, 94: 1040-1. PMID:8071488.	Independent variable, dependent variable

	Citation	Rationale
89	Ebbs, Jh, Tisdall, Ff, Scott, Wa. The influence of prenatal diet on the mother and child. Journal of Nutrition, 1941, 22: 515-26	Date
90	Elmacioglu, F., Surucu, B., Alper, T. et al. Is adequate and balanced nutrition during pregnancy more effective than iron and folic acid supplements?. Central European Journal of Medicine, 2010, 5: 235-242	Dependent variable
91	Ershoff, Dh, Aaronson, Nk, Danaher, Bg et al. Behavioral, health, and cost outcomes of an HMO based prenatal health education program. Public health reports, 1983, 98: 536-47	Independent variable
92	Ershoff, D. H., Aaronson, N. K., Danaher, B. G. et al.. Behavioral, health, and cost outcomes of an HMO-based prenatal health education program. Public Health Rep, 1983, 98: 536-47. PMID:6419268.	Duplicate
93	Eshriqui, I., Vilela, A. A., Rebelo, F. et al. Gestational dietary patterns are not associated with blood pressure changes during pregnancy and early postpartum in a Brazilian prospective cohort. Eur J Nutr, 2016, 55: 21-32. PMID:25526968.	Dependent variable
94	Fairburn, C. G., Stein, A., Jones, R. Eating habits and eating disorders during pregnancy. Psychosom Med, 1992, 54: 665-72. PMID:1454960.	Independent variable
95	Farbu, J., Haugen, M., Meltzer, H. M. et al. Impact of singlehood during pregnancy on dietary intake and birth outcomes- a study in the Norwegian Mother and Child Cohort Study. BMC Pregnancy Childbirth, 2014, 14. PMID:25475509.	Independent variable
96	Fard, N Mehrabian F Sarraf-Zadegan NS. Fat-modified diets during pregnancy and lactation and serum lipids after birth. Indian J Pediatr, 2004, 71: 683-7	Country
97	Farland, L. V., Rifas-Shiman, S. L., Gillman, M. W. Early Pregnancy Cravings, Dietary Intake, and Development of Abnormal Glucose Tolerance. J Acad Nutr Diet, 2015, 115. PMID:26099686.	Study design, independent variable
98	Ferland, S., O'Brien, H. T. Maternal dietary intake and pregnancy outcome. J Reprod Med, 2003, 48: 86-94. PMID:12621791.	Independent variable
99	Flynn, A. C., Seed, P. T., Patel, N. et al. Dietary patterns in obese pregnant women; influence of a behavioral intervention of diet and physical activity in the UPBEAT randomized controlled trial. Int J Behav Nutr Phys Act, 2016, 13. PMID:27894316.	Health status
100	Ford, J. H. Preconception risk factors and SGA babies: Papilloma virus, omega 3 and fat soluble vitamin deficiencies. Early Hum Dev, 2011, 87: 785-9. PMID:21705161.	Independent variable

	Citation	Rationale
101	Fowles, E. R., Gabrielson, M. First trimester predictors of diet and birth outcomes in low-income pregnant women. J Community Health Nurs, 2005, 22: 117-30. PMID:15877540.	Independent variable, study design
102	Fraser, R. B., Ford, F. A., Milner, R. D. G. A controlled trial of a high dietary fibre intake in pregnancy-effects in plasma glucose and insulin levels. Diabetologia, 1983, 25: 238-241	Independent variable
103	Fraser, Rb. High fibre diets in pregnancy. Nutrition in Pregnancy. Proceedings of 10th Study Group of the Royal College of Obstetricians and Gynaecologists; 1982 September, 1983, : 269-80	Independent variable, not peer reviewed
104	Garratt, F. N. Pre-eclampsia: a challenge to public health teams worldwide to ensure that maternal diets contain adequate levels of folic acid, n3 polyunsaturated fatty acids and vitamin D at conception. Public Health, 2009, 123: 95-6. PMID:19058819.	Study design
105	Gennaro, S., Biesecker, B., Fantasia, H. C. et al. Nutrition profiles of African [corrected] American women in the third trimester. MCN Am J Matern Child Nurs, 2011, 36: 120-6. PMID:21350375.	Independent variable, dependent variable
106	Gerrard, J., Popeski, D., Ebbeling, L. et al. Dietary omega 3 fatty acids and gestational hypertension in the Inuit. Arctic Med Res, 1991, : 763-7. PMID:1365294.	Independent variable, study design
107	Gesteiro, E., Rodriguez Bernal, B., Bastida, S. et al. Maternal diets with low healthy eating index or Mediterranean diet adherence scores are associated with high cord-blood insulin levels and insulin resistance markers at birth. Eur J Clin Nutr, 2012, 66: 1008-15. PMID:22828732.	Dependent variable
108	Ghebremeskel, K., Leighfield, M., Ashwell, M. et al. Infant brain lipids and diet [1]. Lancet, 1992, 340: 1093-1094	Dependent variable
109	Gillen, L., Tapsell, L. C., Martin, G. S. et al. The type and frequency of consumption of carbohydrate-rich foods may play a role in the clinical expression of insulin resistance during pregnancy. Dietetics, 2002, 59: 135-143	Dependent variable
110	Glueck, C. J., Goldenberg, N., Pranikoff, J. et al. Effects of metformin-diet intervention before and throughout pregnancy on obstetric and neonatal outcomes in patients with polycystic ovary syndrome. Curr Med Res Opin, 2013, 29: 55-62. PMID:23205605.	Health status

	Citation	Rationale
111	Godfrey, K., Robinson, S., Barker, D. J. et al. Maternal nutrition in early and late pregnancy in relation to placental and fetal growth. Bmj, 1996, 312: 410-4. PMID:8601112.	Independent variable
112	Grant, S. M., Wolever, T. M., O'Connor, D. L. et al. Effect of a low glycaemic index diet on blood glucose in women with gestational hyperglycaemia. Diabetes Res Clin Pract, 2011, 91: 15-22. PMID:21094553.	Independent variable
113	Gray-Donald, K., Robinson, E., Collier, A. et al. Intervening to reduce weight gain in pregnancy and gestational diabetes mellitus in Cree communities: an evaluation. Cmaj, 2000, 163: 1247-51. PMID:11107459.	Independent variable
114	Grivell, R. M., Yelland, L. N., Deussen, A. et al. Antenatal dietary and lifestyle advice for women who are overweight or obese and the effect on fetal growth and adiposity: the LIMIT randomised trial. Bjog, 2016, 123: 233-43. PMID:26841216.	Independent variable
115	Guilloty, N. I., Soto, R., Anzalota, L. et al. Diet, Pre-pregnancy BMI, and Gestational Weight Gain in Puerto Rican Women. Matern Child Health J, 2015, 19: 2453-61. PMID:26100133.	Independent variable, dependent variable
116	Guldner, L., Monfort, C., Rouget, F. et al. Maternal fish and shellfish intake and pregnancy outcomes: a prospective cohort study in Brittany, France. Environ Health, 2007, 6. PMID:17958907.	Independent variable
117	Gupta, A. P., Bhandari, B., Gupta, A. et al. Stool pH and sugar in preterm neonates. Indian J Pediatr, 1984, 51: 391-3. PMID:6526446.	Independent variable
118	Haas, A. V. Diet du jour! Pregnancy and popular diets. Midwifery Today Int Midwife, 2014, : 53-5. PMID:25975083.	Study design, non peer-reviewed
119	Haggarty, P., Campbell, D. M., Duthie, S. et al. Diet and deprivation in pregnancy. Br J Nutr, 2009, 102: 1487-97. PMID:19682400.	Independent variable
120	Halldorsson, T. I., Thorsdottir, I., Meltzer, H. M. et al. Dioxin-like activity in plasma among Danish pregnant women: dietary predictors, birth weight and infant development. Environ Res, 2009, 109: 22-8. PMID:18945425.	Independent variable
121	Halldorsson, T. I., Thorsdottir, I., Meltzer, H. M. et al. Linking exposure to polychlorinated biphenyls with fatty fish consumption and reduced fetal growth among Danish pregnant women: a cause for concern?. Am J Epidemiol, 2008, 168: 958-65. PMID:18718897.	Independent variable

	Citation	Rationale
122	Hankin, Me, Symonds, Em. Body weight, diet and pre-eclamptic toxaemia of pregnancy. gynaecology, 1962, 4: 156-60	Date
123	Harper, V., MacInnes, R., Campbell, D. et al. Increased birth weight in northerly islands: is fish consumption a red herring?. Bmj, 1991, 303. PMID:1878642.	Independent variable
124	Hatfield, Hm, Dunstan, Ja, Hayes, L et al. Dietary N-3 polyunsaturated fatty acid (PUFA) supplementation during pregnancy is associated with changes in cord blood (CB) progenitor numbers and responsiveness to IL-5 in infants at risk of atopy [Abstract]. Journal of allergy and clinical immunology, 2003, 111	Study design
125	Haugen, M., Brantsaeter, A. L., Trogstad, L. et al. Vitamin D supplementation and reduced risk of preeclampsia in nulliparous women. Epidemiology, 2009, 20: 720-6. PMID:19451820.	Independent variable
126	Hayashi, Tt, Phitaksphraiwan, P, Willson, Jr. Effects of diet and diuretic agents in pregnancy toxemias. Obstet Gynecol, 1963, 22: 327-34	Date
127	Healthy diet halves the risk of diabetes after pregnancy. Kidney Care, 2013, 10: 6-6	Dependent variable
128	Hegsted, D. M. What is a healthful diet?. Prim Care, 1982, 9: 445-73. PMID:6924383.	Dependent variable
129	Heim, T. Energy and lipid requirements of the fetus and the preterm infant. J Pediatr Gastroenterol Nutr, 1983, . PMID:6417303.	Independent variable, study design
130	Hellmuth, C., Lindsay, K. L., Uhl, O. et al. Association of maternal prepregnancy BMI with metabolomic profile across gestation. Int J Obes (Lond), 2017, 41: 159-169. PMID:27569686.	Dependent variable
131	Hennessy, M. D., Volpe, S. L., Sammel, M. D. et al. Skipping meals and less walking among African Americans diagnosed with preterm labor. J Nurs Scholarsh, 2010, 42: 147-55. PMID:20618599.	Independent variable
132	Heppe, D. H., Steegers, E. A., Timmermans, S. et al. Maternal fish consumption, fetal growth and the risks of neonatal complications: the Generation R Study. Br J Nutr, 2011, 105: 938-49. PMID:21266095.	Independent variable
133	Hernandez-Diaz, S., Boeke, C. E., Romans, A. T. et al. Triggers of spontaneous preterm delivery--why today?. Paediatr Perinat Epidemiol, 2014, 28: 79-87. PMID:24384058.	Independent variable, study design

	Citation	Rationale
134	Herrera, Mg, Mora, Jo, Paredes, B et al. Maternal weight/height and the effect of food supplementation during pregnancy and lactation. Maternal Nutrition during Pregnancy and Lactation. A Nestle Foundation Workshop; 1979 April 26-27; Lausanne Switzerland, 1980, : 252-63	Independent variable, not peer reviewed
135	Hoff, C., Wertelecki, W., Reyes, E. et al. Diet, blood pressure, and hematologic variables of nulliparous women attending a prenatal clinic. Obstet Gynecol, 1986, 67: 868-72. PMID:3703412.	Independent variable
136	Hoffman, D, Uauy, R, Birch, D et al. Essentiality of dietary docosahexaenoic acid (dha) for optimal visual maturation in preterm infants: plasma and red blood cell (rbc) fatty acid profiles. Iovs, 1992, 33	Dependent variable
137	Hoffman, Dr, Uauy, R. Essentiality of dietary n-3 fatty acids for premature infants; plasma and red blood cell fatty acid composition. Lipids, 1992, 27: 886-95	Independent variable
138	Hollingsworth, D. R., Ney, D., Stubblefield, N. et al. Metabolic and therapeutic assessment of gestational diabetes by two-hour and twenty-four-hour isocaloric meal tolerance tests. Diabetes, 1985, : 81-7. PMID:3888746.	Dependent variable
139	Hook, E. B. Influence of pregnancy on dietary selection. Int J Obes, 1980, 4: 338-40. PMID:7419353.	Study design
140	Horan, M. K., McGowan, C. A., Gibney, E. R. et al. Maternal low glycaemic index diet, fat intake and postprandial glucose influences neonatal adiposity--secondary analysis from the ROLO study. Nutr J, 2014, 13. PMID:25084967.	Independent variable
141	Horan, M. K., McGowan, C. A., Gibney, E. R. et al. Maternal Nutrition and Glycaemic Index during Pregnancy Impacts on Offspring Adiposity at 6 Months of Age--Analysis from the ROLO Randomised Controlled Trial. Nutrients, 2016, 8. PMID:26742066.	Independent variable, dependent variable
142	Horan, M. K., McGowan, C. A., Gibney, E. R. et al. Maternal nutrition and glycaemic index during pregnancy impacts on offspring adiposity at 6 months of ageâ€"analysis from the ROLO randomised controlled trial. Nutrients, 2016, 8.	Duplicate
143	Huh, S. Y., Rifas-Shiman, S. L., Kleinman, K. P. et al. Maternal protein intake is not associated with infant blood pressure. Int J Epidemiol, 2005, 34: 378-84. PMID:15576466.	Independent variable
144	Hui, A. L., Ludwig, S. M., Gardiner, P. et al. Community-based exercise and dietary intervention during pregnancy: A pilot study. Canadian Journal of Diabetes, 2006, 30: 169-175	Independent variable

	Citation	Rationale
145	Hui, A., Back, L., Ludwig, S. et al. Lifestyle intervention on diet and exercise reduced excessive gestational weight gain in pregnant women under a randomized controlled trial. Obstetrical and Gynecological Survey, 2012, 67: 263-264	Independent variable
146	Iyengar, L. Effects of dietary supplements late in pregnancy on the expectant mother and her newborn. Indian Journal of Medical Research, 1967, 55: 85-9	Date
147	Jedrychowski, W., Perera, F., Mrozek-Budzyn, D. et al. Higher fish consumption in pregnancy may confer protection against the harmful effect of prenatal exposure to fine particulate matter. Ann Nutr Metab, 2010, 56: 119-26. PMID:20134157.	Independent variable
148	Jing, W., Huang, Y., Liu, X. et al. The effect of a personalized intervention on weight gain and physical activity among pregnant women in China. Int J Gynaecol Obstet, 2015, 129: 138-41. PMID:25697965.	Independent variable
149	Johnson, A. A., Knight, E. M., Edwards, C. H. et al. Dietary intakes, anthropometric measurements and pregnancy outcomes. J Nutr, 1994, 124. PMID:8201444.	Independent variable
150	Jovanovic-Peterson, L, Durak, Ep, Peterson, Cm. Randomized trial of diet vs diet plus cardiovascular conditioning on glucose levels in gestational diabetes. Am J Obstet Gynecol, 1989, 161: 415-9	Health status
151	Jovanovic-Peterson, L., Peterson, C. M. Turning point in the management of pregnancies complicated by diabetes. Normoglycemia with self blood glucose monitoring of diet and insulin dosing. ASAIO Trans, 1990, 36: 799-804. PMID:2268482.	Independent variable, study design
152	Jowett, N. I., Nichol, S. G. Diabetic pregnancy. Midwives Chron, 1987, 100: 33-6. PMID:3645266.	Study design
153	Kafatos, A. G., Vlachonikolis, I. G., Codrington, C. A. Nutrition during pregnancy: the effects of an educational intervention program in Greece. Am J Clin Nutr, 1989, 50: 970-9. PMID:2816804.	Independent variable
154	Kalhan, S. C., Tserng, K. Y., Gilfillan, C. et al. Metabolism of urea and glucose in normal and diabetic pregnancy. Metabolism, 1982, 31: 824-33. PMID:7098852.	Dependent variable
155	Kaseb, F., Kimiagar, M., Ghafarpoor, M. et al. Effect of traditional food supplementation during pregnancy on maternal weight gain and birthweight. Int J Vitam Nutr Res, 2002, 72: 389-93. PMID:12596505.	Independent variable

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156	Kelleher, C. C., Viljoen, K., Khalil, H. et al. Longitudinal follow-up of the relationship between dietary intake and growth and development in the Lifeways cross-generation cohort study 2001-2013. Proc Nutr Soc, 2014, 73: 118-31. PMID:24300176.	Study design
157	Kesmodel, U., Olsen, S. F., Salvig, J. D. Marine n-3 fatty acid and calcium intake in relation to pregnancy induced hypertension, intrauterine growth retardation, and preterm delivery. A case-control study. Acta Obstet Gynecol Scand, 1997, 76: 38-44. PMID:9033242.	Independent variable
158	Khoury, J, Haugen, G, Tonstad, S et al. Effect of an antiatherogenic diet on maternal and fetal Doppler velocimetry: a randomized clinical trial. 35th Nordic Congress of Obstetrics and Gynecology; 2006 May 23-25; Goteburg, Sweden, 2008,	Not peer-reviewed
159	Khoury, J, Henriksen, T, Seljeflot, I et al. Effects of a cholesterol-lowering diet during pregnancy on cardiovascular risk factors and pregnany outcome: a randomized clinical trial [Study design]. Atherosclerosis. Supplements, 2006, 7	Study design
160	Khoury, J., Haugen, G., Tonstad, S. et al. Effect of a cholesterol-lowering diet during pregnancy on maternal and fetal Doppler velocimetry: the CARRDIP study. Am J Obstet Gynecol, 2007, 196. PMID:17547890.	Independent variable
161	Kinnunen, T. I., Pasanen, M., Aittasalo, M. et al. Preventing excessive weight gain during pregnancy - a controlled trial in primary health care. Eur J Clin Nutr, 2007, 61: 884-91. PMID:17228348.	Independent variable
162	Kinnunen, T. I., Puhkala, J., Raitanen, J. et al. Effects of dietary counselling on food habits and dietary intake of Finnish pregnant women at increased risk for gestational diabetes - a secondary analysis of a cluster-randomized controlled trial. Matern Child Nutr, 2014, 10: 184-97. PMID:22735030.	Independent variable, dependent variable
163	Kizirian, N. V., Kong, Y., Muirhead, R. et al. Effects of a low-glycemic index diet during pregnancy on offspring growth, body composition, and vascular health: a pilot randomized controlled trial. Am J Clin Nutr, 2016, 103: 1073-82. PMID:26936333.	Independent variable
164	Klebanoff, M. A., Harper, M., Lai, Y. et al. Fish consumption, erythrocyte fatty acids, and preterm birth. Obstet Gynecol, 2011, 117: 1071-7. PMID:21508745.	Independent variable
165	Knudsen, V. K., Heitmann, B. L., Halldorsson, T. I. et al. Maternal dietary glycaemic load during pregnancy and gestational weight gain, birth weight and postpartum weight retention: a study within the Danish National Birth Cohort. Br J Nutr, 2013, 109: 1471-8. PMID:22906835.	Independent variable

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166	Knuist, M., Bonsel, G. J., Zondervan, H. A. et al. Low sodium diet and pregnancy-induced hypertension: a multi-centre randomised controlled trial. Br J Obstet Gynaecol, 1998, 105: 430-4. PMID:9609271.	Independent variable
167	Koivusalo, S. B., Rono, K., Klemetti, M. M. et al. Gestational Diabetes Mellitus Can Be Prevented by Lifestyle Intervention: The Finnish Gestational Diabetes Prevention Study (RADIEL): A Randomized Controlled Trial. Diabetes Care, 2016, 39: 24-30. PMID:26223239.	Independent variable
168	Kokanali, M. K., Tokmak, A., Kaymak, O. et al. The effect of treatment on pregnancy outcomes in women with one elevated oral glucose tolerance test value. Ginekol Pol, 2014, 85: 748-53. PMID:25546925.	Independent variable
169	Kolu, P., Raitanen, J., Rissanen, P. et al. Cost-effectiveness of lifestyle counselling as primary prevention of gestational diabetes mellitus: findings from a cluster-randomised trial. PLoS One, 2013, 8. PMID:23457562.	Independent variable
170	Korpi-Hyovalti, E., Schwab, U., Laaksonen, D. E. et al. Effect of intensive counselling on the quality of dietary fats in pregnant women at high risk of gestational diabetes mellitus. Br J Nutr, 2012, 108: 910-7. PMID:22093485.	Independent variable
171	Kubota, K., Itoh, H., Tasaka, M. et al. Changes of maternal dietary intake, bodyweight and fetal growth throughout pregnancy in pregnant Japanese women. J Obstet Gynaecol Res, 2013, 39: 1383-90. PMID:23815608.	Independent variable
172	Kumar, P., Nangia, S., Saili, A. et al. Growth and morbidity patterns of exclusively breast-fed preterm babies. Indian Pediatr, 1999, 36: 296-300. PMID:10713842.	Dependent variable
173	Lakin, V., Haggarty, P., Abramovich, D. R. et al. Dietary intake and tissue concentration of fatty acids in omnivore, vegetarian and diabetic pregnancy. Prostaglandins Leukot Essent Fatty Acids, 1998, 59: 209-20. PMID:9844995.	Independent variable
174	Langley-Evans, A. J., Langley-Evans, S. C. Relationship between maternal nutrient intakes in early and late pregnancy and infants weight and proportions at birth: prospective cohort study. J R Soc Promot Health, 2003, 123: 210-6. PMID:14669495.	Independent variable
175	Laraia, B. A., Siega-Riz, A. M., Kaufman, J. S. et al. Proximity of supermarkets is positively associated with diet quality index for pregnancy. Prev Med, 2004, 39: 869-75. PMID:15475018.	Dependent variable
176	Latva-Pukkila, U., Isolauri, E., Laitinen, K. Dietary and clinical impacts of nausea and vomiting during pregnancy. J Hum Nutr Diet, 2010, 23: 69-77. PMID:19943842.	Dependent variable

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177	Leblance, H., Passa, P. Diabetes and pregnancy. Revue du Praticien - Medecine Generale, 1992, 6: 577-582	Study design, language
178	Lechtig, A, Habicht, Jp, Delgado, H et al. Effect of food supplementation during pregnancy on birthweight. Pediatrics, 1975, 56: 508-20	Date
179	Lenders, C. M., Hediger, M. L., Scholl, T. O. et al. Gestational age and infant size at birth are associated with dietary sugar intake among pregnant adolescents. J Nutr, 1997, 127: 1113-7. PMID:9187625.	Independent variable
180	Ley, S. H., Hanley, A. J., Retnakaran, R. et al. Effect of macronutrient intake during the second trimester on glucose metabolism later in pregnancy. Am J Clin Nutr, 2011, 94: 1232-40. PMID:21955650.	Independent variable, study design
181	L'Heureux, J. Got sugar? Tips on preventing diabetes. Posit Living, 2002, 11: 12-4. PMID:12083048.	Study design
182	Li, S., Zhu, Y., Chavarro, J. E. et al. Healthful Dietary Patterns and the Risk of Hypertension Among Women With a History of Gestational Diabetes Mellitus: A Prospective Cohort Study. Hypertension, 2016, 67: 1157-65. PMID:27091899.	Dependent variable
183	Lilja, G, Dannaeus, A, Foucard, T et al. Effects of maternal diet during late pregnancy and lactation on the development of atopic disease in infants up to 18 months of age - in-vivo results. Clinical and Experimental Allergy, 1989, 19: 473-9	Dependent variable
184	Liu, X., Lv, L., Zhang, H. et al. Folic acid supplementation, dietary folate intake and risk of preterm birth in China. European Journal of Nutrition, 2016, 55: 1411-1422	Independent variable, study design
185	Lorber, D. Gestational diabetes: The hidden epidemic. Female Patient - Practical Ob/Gyn Medicine, 1990, 15: 15-25	Study design
186	Luoto, R, Nermes, M, Laitinen, K et al. Impact of Maternal Probiotic-Supplemented Dietary Counselling on Pregnancy Outcome and Prenatal and Postnatal Growth: A Double-Blind, Placebo-Controlled Study. Pediatric Academic Societies Annual Meeting; 2009 May 2 5; Baltimore MD, United States, 2009,	Not peer-reviewed
187	MacGillivray, I. Aetiology of pre-eclampsia. Br J Hosp Med, 1981, 26. PMID:7296126.	Independent variable, study design

	Citation	Rationale
188	MacNeill, S., Dodds, L., Hamilton, D. C. et al. Rates and risk factors for recurrence of gestational diabetes. Diabetes Care, 2001, 24: 659-62. PMID:11315827.	Independent variable
189	Mahony, R, Byrne, J, Curran, S et al. A pilot study of the feasibility of a randomised trial of low glycaemic diet versus normal diet from early pregnancy in euglycaemic women. Arch Dis Child Fetal Neonatal Ed, 2008, 93	Not peer-reviewed
190	Makela, J., Lagstrom, H., Kaljonen, A. et al. Hyperglycemia and lower diet quality in pregnant overweight women and increased infant size at birth and at 13 months of age--STEPS study. Early Hum Dev, 2013, 89: 439-44. PMID:23375946.	Study design
191	Maresh, M, Alderson, C, Beard, Rw et al. Comparison of insulin against diet treatment in the management of abnormal carbohydrate tolerance in pregnancy. Nutrition in Pregnancy. Proceedings of 10th Study Group of the Rcog; 1983, 1983, : 255-67	Independent variable, not peer reviewed
192	Mariscal-Arcas, M., Rivas, A., Monteagudo, C. et al. Proposal of a Mediterranean diet index for pregnant women. Br J Nutr, 2009, 102: 744-9. PMID:19243664.	Dependent variable
193	Markovic, T. P., Muirhead, R., Overs, S. et al. Randomized Controlled Trial Investigating the Effects of a Low-Glycemic Index Diet on Pregnancy Outcomes in Women at High Risk of Gestational Diabetes Mellitus: The GI Baby 3 Study. Diabetes Care, 2016, 39: 31-8. PMID:26185283.	Independent variable
194	Marshall, J. Infant feeding: 8. Breastfeeding premature babies. Pract Midwife, 2013, 16. PMID:23789255.	Dependent variable
195	Martin, C. L., Siega-Riz, A. M., Sotres-Alvarez, D. et al. Maternal Dietary Patterns are Associated with Lower Levels of Cardiometabolic Markers during Pregnancy. Paediatr Perinat Epidemiol, 2016, 30: 246-55. PMID:26848932.	Study design
196	Maten, Gd, Hammen, Rm, Visman, L et al. Effects of a sodium restricted diet during pregnancy on maternal blood pressure and zinc status. J Perinat Med, 1992, 20	Independent variable
197	Mathews, F., Yudkin, P., Neil, A. Influence of maternal nutrition on outcome of pregnancy: prospective cohort study. Bmj, 1999, 319: 339-43. PMID:10435950.	Independent variable
198	Mathewson, M. Women diagnosed with pregnancy-induced hypertension (pre-eclampsia) should be placed on sodium restricted diets. Crit Care Nurse, 1983, 3. PMID:6552952.	Study design
199	McFadyen, A. Intervention in mothers with eating disorders and their babies (controlled trial). National Research Register, 2000,	Not peer-reviewed

	Citation	Rationale
200	McGowan, C. A., Walsh, J. M., Byrne, J. et al. The influence of a low glycemic index dietary intervention on maternal dietary intake, glycemic index and gestational weight gain during pregnancy: a randomized controlled trial. Nutr J, 2013, 12. PMID:24175958.	Independent variable
201	McGuire, Mk, Burgert, Sl, Milner, Ja et al. Selenium status of infants is influenced by supplementation of formula or maternal diets. American Journal of Clinical Nutrition, 1993, 58: 643-8	Independent variable
202	Meinila, J., Koivusalo, S. B., Valkama, A. et al. Nutrient intake of pregnant women at high risk of gestational diabetes. Food Nutr Res, 2015, 59. PMID:25994096.	Dependent variable
203	Meinila, J., Valkama, A., Koivusalo, S. B. et al. Healthy Food Intake Index (HFII) - Validity and reproducibility in a gestational-diabetes-risk population. BMC Public Health, 2016, 16. PMID:27475905.	Dependent variable
204	Meltzer, H. M., Brantsaeter, A. L., Nilsen, R. M. et al. Effect of dietary factors in pregnancy on risk of pregnancy complications: results from the Norwegian Mother and Child Cohort Study. Am J Clin Nutr, 2011, 94. PMID:21543541.	Study design
205	Mendelson, R., Dollard, D., Hall, P. et al. The impact of the Healthiest Babies Possible Program on maternal diet and pregnancy outcome in underweight and overweight clients. J Can Diet Assoc, 1991, 52: 229-34. PMID:10116012.	Independent variable
206	Mendez, M. A., Plana, E., Guxens, M. et al. Seafood consumption in pregnancy and infant size at birth: results from a prospective Spanish cohort. J Epidemiol Community Health, 2010, 64: 216-22. PMID:19710045.	Independent variable
207	Mestman, J. H. Outcome of diabetes screening in pregnancy and perinatal morbidity in infants of mothers with mild impairment in glucose tolerance. Diabetes Care, 1980, 3: 447-52. PMID:7389561.	Independent variable
208	Mikkelsen, T. B., Osler, M., Orozova-Bekkevold, I. et al. Association between fruit and vegetable consumption and birth weight: a prospective study among 43,585 Danish women. Scand J Public Health, 2006, 34: 616-22. PMID:17132595.	Independent variable
209	Mikode, M. S., White, A. A. Dietary assessment of middle-income pregnant women during the first, second, and third trimesters. J Am Diet Assoc, 1994, 94: 196-9. PMID:8300999.	Independent variable
210	Misra, A., Ray, S., Patrikar, S. A longitudinal study to determine association of various maternal factors with neonatal birth weight at a tertiary care hospital. Med J Armed Forces India, 2015, 71: 270-3. PMID:26288495.	Country

	Citation	Rationale
211	Mitchell, J., Mackerras, D. The traditional humoral food habits of pregnant Vietnamese-Australian women and their effect on birth weight. Aust J Public Health, 1995, 19: 629-33. PMID:8616205.	Independent variable
212	Mohanty, A. F., Thompson, M. L., Burbacher, T. M. et al. Periconceptional Seafood Intake and Fetal Growth. Paediatr Perinat Epidemiol, 2015, 29: 376-87. PMID:26147526.	Independent variable
213	Moldenhauer, J, Guo, S, Liang, R et al. Dietary intake levels of the antioxidants vitamin c and vitamin e are adequately achieved with standard prenatal vitamin supplementation in high risk pregnancy groups [abstract]. Am J Obstet Gynecol, 2002, 187	Not peer-reviewed
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215	Morley, R, Lucas, A. Randomised diet in the neonatal period and growth performance until 7.5-8 y of age in preterm children. American Journal of Clinical Nutrition, 2000, 71: 822-8	Dependent variable
216	Morley, R., Lucas, A. Early diet and outcome in prematurely born. Clinical Nutrition, 1993, 12: 6-11	Independent variable, health status
217	Morrison, Ra, Brien, Pms, Micklewright, A. The effect of dietary supplementation with linoleic acid on the development of pregnancy induced hypertension. 4th World Congress of the International Society for the Study of Hypertension in Pregnancy;1984 June 18-21; Amsterdam, the Neth, 1984,	Not peer-reviewed
218	Morrison, Ra, Brien, Pms. The effect of dietary supplementation with prostaglandin precursors in pregnancy induced hypertension (PIH). 5th International Congress of the International Society for the Study of Hypertension in Pregnancy; 1986 7-10 July, Nottingham,, 1986,	Not peer-reviewed
219	Morton, N. E., Gulbrandsen, C. L., Rao, D. C. et al. Determinants of blood pressure in Japanese-American Families. Hum Genet, 1980, 53: 261-6. PMID:7358393.	Independent variable, health status
220	Moses, R. G., Casey, S. A., Quinn, E. G. et al. Pregnancy and Glycemic Index Outcomes study: effects of low glycemic index compared with conventional dietary advice on selected pregnancy outcomes. Am J Clin Nutr, 2014, 99: 517-23. PMID:24351875.	Independent variable

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223	Moses, Rg, Luebke, M, Petocz, P et al. Maternal diet and infant size 2 y after the completion of a study of a low-glycemic-index diet in pregnancy. American Journal of Clinical Nutrition, 2007, 86	Dependent variable
224	Moss, J. L., Harris, K. M. Impact of maternal and paternal preconception health on birth outcomes using prospective couples' data in Add Health. Arch Gynecol Obstet, 2015, 291: 287-98. PMID:25367598.	Independent variable
225	Mullaney, Laura, Brennan, Aisling, Cawley, Shona et al. Relationship between fasting plasma glucose levels and maternal food group and macronutrient intakes in pregnancy. Dietetics, 2016, 73: 441-447	Independent variable
226	Munson, M., Saatkamp, R., West, C. Late preterm infants: steps to success. Neonatal Netw, 2011, 30: 267-70. PMID:21729860.	Dependent variable
227	Musaiger, A. O. Food habits of mothers and children in two regions of Oman. Nutr Health, 1996, 11: 29-48. PMID:8817582.	Independent variable, study design
228	Musselman, J. R., Jurek, A. M., Johnson, K. J. et al. Maternal dietary patterns during early pregnancy and the odds of childhood germ cell tumors: A Children's Oncology Group study. Am J Epidemiol, 2011, 173: 282-91. PMID:21098631.	Dependent variable
229	Myhre, R., Brantsaeter, A. L., Myking, S. et al. Intakes of garlic and dried fruits are associated with lower risk of spontaneous preterm delivery. J Nutr, 2013, 143: 1100-8. PMID:23700347.	Independent variable
230	Newman, Ak, Deussen, Ar, Moran, Lj et al. The effect of antenatal dietary and lifestyle advice on maternal psychological health in women who are overweight or obese-findings from the limit randomised trial. Journal of Paediatrics and Child Health [abstracts of the 17th Congress of the Perinatal Society of Australia and New Zealand, , 2013, 49	Not peer-reviewed

	Citation	Rationale
231	Ney, D., Hollingsworth, D. R., Cousins, L. Decreased insulin requirement and improved control of diabetes in pregnant women given a high-carbohydrate, high-fiber, low-fat diet. Diabetes Care, 1982, 5: 529-33. PMID:6329613.	Independent variable, health status
232	Nicholls, M. G. Reduction of dietary sodium in Western Society. Benefit or risk?. Hypertension, 1984, 6: 795-801. PMID:6394485.	Study design
233	Niedhammer, I., Murrin, C., O'Mahony, D. et al. Explanations for social inequalities in preterm delivery in the prospective Lifeways cohort in the Republic of Ireland. Eur J Public Health, 2012, 22: 533-8. PMID:21746747.	Independent variable
234	Odent, M. Land food .. sea food .. brain food. Midwifery Today Childbirth Educ, 1996, : 18-20. PMID:9016057.	Study design
235	Olafsdottir, A. S., Skuladottir, G. V., Thorsdottir, I. et al. Maternal diet in early and late pregnancy in relation to weight gain. Int J Obes (Lond), 2006, 30: 492-9. PMID:16331301.	Independent variable
236	Olsen, S. F., Beck, D. N., Kollslid, R. et al. High birth weights in prewar Faroe Islands. J Epidemiol Community Health, 2001, 55. PMID:11160178.	Independent variable
237	Olsen, S. F., Grandjean, P., Weihe, P. et al. Frequency of seafood intake in pregnancy as a determinant of birth weight: evidence for a dose dependent relationship. J Epidemiol Community Health, 1993, 47: 436-40. PMID:8120495.	Independent variable
238	Olsen, S. F., Secher, N. J. Low consumption of seafood in early pregnancy as a risk factor for preterm delivery: prospective cohort study. Bmj, 2002, 324. PMID:11859044.	Independent variable
239	Paisey, R. B., Hartog, M., Savage, P. A high-fibre diet in gestational diabetes--wheat fibre, leguminous fibre or both?. Hum Nutr Appl Nutr, 1987, 41: 146-9. PMID:3032872.	Study design
240	Papadopoulou, E., Kogevinas, M., Botsivali, M. et al. Maternal diet, prenatal exposure to dioxin-like compounds and birth outcomes in a European prospective mother-child study (NewGeneris). Sci Total Environ, 2014, 484: 121-8. PMID:24691212.	Study design
241	Papazian, T., Hout, H., Sibai, D. et al. Development, reproducibility and validity of a food frequency questionnaire among pregnant women adherent to the Mediterranean dietary pattern. Clinical Nutrition, 2016, 35: 1550-1556	Dependent variable
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243	Pentieva, K., Petrova, S., Ovcharova, D. et al. Influence of some sociodemographic factors and smoking on the risk for intrauterine growth retardation. Khigiena i Zdraveopazvane, 1996, 39: 5-8	Language
244	Perez-Ferre, N., Fernandez, D., Torrejon, M. J. et al. Effect of lifestyle on the risk of gestational diabetes and obstetric outcomes in immigrant Hispanic women living in Spain. J Diabetes, 2012, 4: 432-8. PMID:22742428.	Health status
245	Persson, B, Stangenberg, M, Hansson, U et al. Gestational diabetes mellitus (GDM): comparative evaluation of two treatment regimens, diet vs insulin and diet. Diabetes, 1985, 34: 101-5	Independent variable
246	Petrella, E., Malavolti, M., Bertarini, V. et al. Gestational weight gain in overweight and obese women enrolled in a healthy lifestyle and eating habits program. J Matern Fetal Neonatal Med, 2014, 27: 1348-52. PMID:24175912.	Independent variable
247	Petridou, E., Stoikidou, M., Diamantopoulou, M. et al. Diet during pregnancy in relation to birthweight in healthy singletons. Child Care Health Dev, 1998, 24: 229-42. PMID:9618037.	Independent variable, study design
248	Phelan, S., Hart, C., Phipps, M. et al. Maternal behaviors during pregnancy impact offspring obesity risk. Exp Diabetes Res, 2011, 2011. PMID:22110475.	Independent variable
249	Picaud, Jc, Lapillonne, A, Boucher, P et al. Dietary cholesterol does not affect vitamin D metabolism in preterm infants : preliminary results. Pediatr Res, 1999, 45	Dependent variable
250	Picone, T. A., Allen, L. H., Olsen, P. N. et al. Pregnancy outcome in North American women. II. Effects of diet, cigarette smoking, stress, and weight gain on placentas, and on neonatal physical and behavioral characteristics. Am J Clin Nutr, 1982, 36: 1214-24. PMID:7148740.	Independent variable
251	Pinto, E., Barros, H., dos Santos Silva, I. Dietary intake and nutritional adequacy prior to conception and during pregnancy: a follow-up study in the north of Portugal. Public Health Nutr, 2009, 12: 922-31. PMID:18752697.	Independent variable, dependent variable
252	Piraquive, J, Grieve, P, Sudha, K et al. Quality of Diet and Central Nervous System Activity in Low Birth Weight Infants. Pediatric Academic Societies Annual Meeting, 2013,	Independent variable
253	Popeski, D., Ebbeling, L. R., Brown, P. B. et al. Blood pressure during pregnancy in Canadian Inuit: community differences related to diet. Cmaj, 1991, 145: 445-54. PMID:1878826.	Independent variable

	Citation	Rationale
254	Qiu, C., Coughlin, K. B., Frederick, I. O. et al. Dietary fiber intake in early pregnancy and risk of subsequent preeclampsia. Am J Hypertens, 2008, 21: 903-9. PMID:18636070.	Independent variable
255	Qiu, C., Zhang, C., Gelaye, B. et al. Gestational diabetes mellitus in relation to maternal dietary heme iron and nonheme iron intake. Diabetes Care, 2011, 34: 1564-9. PMID:21709295.	Independent variable
256	Radder, J. K., Terpstra, J. Comparison of postprandial (lunch tolerance) and postglucose (oral glucose tolerance) blood sugar values in pregnancy. Eur J Obstet Gynecol Reprod Biol, 1980, 10: 163-71. PMID:7189481.	Independent variable
257	Raman, L. Influence of maternal nutritional factors affecting birthweight. Am J Clin Nutr, 1981, 34: 775-83. PMID:7223693.	Country
258	Ramon, R., Ballester, F., Aguinagalde, X. et al. Fish consumption during pregnancy, prenatal mercury exposure, and anthropometric measures at birth in a prospective mother-infant cohort study in Spain. Am J Clin Nutr, 2009, 90: 1047-55. PMID:19710189.	Independent variable
259	Ramon, R., Ballester, F., Iniguez, C. et al. Vegetable but not fruit intake during pregnancy is associated with newborn anthropometric measures. J Nutr, 2009, 139: 561-7. PMID:19158218.	Independent variable
260	Ramos-LevÃ, A. M., PÃ©rez-Ferre, N., FernÃ¡ndez, M. D. et al. Risk factors for gestational diabetes mellitus in a large population of women living in Spain: Implications for preventative strategies. International Journal of Endocrinology, 2012, 2012	Independent variable, study design
261	Ray, J. G., Mamdani, M. M. Association between folic acid food fortification and hypertension or preeclampsia in pregnancy. Arch Intern Med, 2002, 162: 1776-7. PMID:12153382.	Independent variable
262	Reddy, S., Sanders, T. A., Obeid, O. The influence of maternal vegetarian diet on essential fatty acid status of the newborn. Eur J Clin Nutr, 1994, 48: 358-68. PMID:8055852.	Independent variable
263	Reece, Ea, Gay, L, DeGennaro, N et al. A randomized clinical trial of a fiber-enriched diabetic diet vs the standard American Diabetes Association recommended diet in the management of diabetes mellitus in pregnancy. Proceedings of 10th Annual Meeting of Society of Perinatal Obstetricians; 1990 Jan 23-27; Houston, Texas, USA, 1990,	Not peer-reviewed

	Citation	Rationale
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265	Rhodes, E. T., Pawlak, D. B., Takoudes, T. C. et al. Effects of a low-glycemic load diet in overweight and obese pregnant women: a pilot randomized controlled trial. Am J Clin Nutr, 2010, 92: 1306-15. PMID:20962162.	Independent variable
266	Ribeiro, M. D. Diet and pregnancy toxemia: new thoughts on an old problem. Public Health Rev, 1982, 10: 149-67. PMID:7167640.	Study design
267	Rogers, I., Emmett, P., Baker, D. et al. Financial difficulties, smoking habits, composition of the diet and birthweight in a population of pregnant women in the South West of England. ALSPAC Study Team. Avon Longitudinal Study of Pregnancy and Childhood. Eur J Clin Nutr, 1998, 52: 251-60. PMID:9578337.	Independent variable
268	Ross, Ra, Perlzweig, Wa, Taylor, Hm et al. A study of certain dietary factors of possible etiologic significance in toxemias of pregnancy. Am J Obstet Gynecol, 1938, 35: 426-40	Date
269	Ruiz-Gracia, T., Duran, A., Fuentes, M. et al. Lifestyle patterns in early pregnancy linked to gestational diabetes mellitus diagnoses when using IADPSG criteria. The St Carlos gestational study. Clin Nutr, 2016, 35: 699-705. PMID:25998584.	Independent variable
270	Rush, D., Stein, Z., Susser, M. Diet in pregnancy: a randomized controlled trial of nutritional supplements. Birth Defects Orig Artic Ser, 1980, 16. PMID:7000197.	Independent variable
271	Saldana, T. M., Siega-Riz, A. M., Adair, L. S. Effect of macronutrient intake on the development of glucose intolerance during pregnancy. Am J Clin Nutr, 2004, 79: 479-86. PMID:14985225.	Independent variable
272	Sanders, T. A., Reddy, S. The influence of a vegetarian diet on the fatty acid composition of human milk and the essential fatty acid status of the infant. J Pediatr, 1992, 120. PMID:1560329.	Dependent variable
273	Sauder, K. A., Starling, A. P., Shapiro, A. L. et al. Diet, physical activity and mental health status are associated with dysglycaemia in pregnancy: the Healthy Start Study. Diabet Med, 2016, 33: 663-7. PMID:26872289.	Study design
274	Saunders, J. B. Investing in healthy babies. NCSL Legisbrief, 2009, 17: 1-2. PMID:19301480.	Not peer-reviewed

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276	Savard, N., Levallois, P., Rivest, L. P. et al. Impact of individual and ecological characteristics on small for gestational age births: an observational study in Quebec. Chronic Dis Inj Can, 2014, 34: 46-54. PMID:24618381.	Independent variable
277	Schneck, M. E., Sideras, K. S., Fox, R. A. et al. Low-income pregnant adolescents and their infants: dietary findings and health outcomes. J Am Diet Assoc, 1990, 90: 555-8. PMID:2319076.	Independent variable
278	Scott, F. W., Kolb, H. Dietary intervention for diabetes prevention in the neonate. Diabetes Metab Rev, 1998, 14. PMID:9605633.	Study design
279	Seely, E. W., Maxwell, C. Cardiology patient page. Chronic hypertension in pregnancy. Circulation, 2007, 115. PMID:17309919.	Independent variable, study design
280	Sen, S., Rifas-Shiman, S. L., Shivappa, N. et al. Dietary Inflammatory Potential during Pregnancy Is Associated with Lower Fetal Growth and Breastfeeding Failure: Results from Project Viva. J Nutr, 2016, 146: 728-36. PMID:26936137.	Independent variable
281	Shin, D., Lee, K. W., Song, W. O. Dietary Patterns during Pregnancy Are Associated with Risk of Gestational Diabetes Mellitus. Nutrients, 2015, 7: 9369-82. PMID:26569302.	Study design
282	Siega-Riz, A. M., Herrmann, T. S., Savitz, D. A. et al. Frequency of eating during pregnancy and its effect on preterm delivery. Am J Epidemiol, 2001, 153: 647-52. PMID:11282791.	Independent variable
283	Siega-Riz, A. M., Savitz, D. A., Zeisel, S. H. et al. Second trimester folate status and preterm birth. Am J Obstet Gynecol, 2004, 191: 1851-7. PMID:15592264.	Independent variable
284	Simoes-Wust, A. P., Kummeling, I., Mommers, M. et al. Influence of alternative lifestyles on self-reported body weight and health characteristics in women. Eur J Public Health, 2014, 24: 321-7. PMID:23639916.	Independent variable
285	Sister, MorningStar. Sick pregnancies. Midwifery Today Int Midwife, 2014, : 12-5. PMID:25980101.	Study design, non peer-reviewed
286	Smeeth, L., Williams, D. Can a dietary supplement prevent pre-eclampsia? L-arginine with vitamins show promise, but there are good grounds for caution. Bmj, 2011, 342	Independent variable

	Citation	Rationale
287	Smith, L. K., Draper, E. S., Evans, T. A. et al. Associations between late and moderately preterm birth and smoking, alcohol, drug use and diet: a population-based case-cohort study. Arch Dis Child Fetal Neonatal Ed, 2015, 100. PMID:25972442.	Study design
288	Smith, V. M. Preterm infant nutrition. Midwives Chron, 1989, 102: 143-6. PMID:2725350.	Study design
289	Sokup, A., Mioduszewska, M., BaÌ§k, A. et al. Unhealthy eating habits precede gestational diabetes mellitus in Polish women Part I: Evaluation of frequency, regularity of consumed meals and consumed snacks, bread, sweets, fruit and vegetables. Eating habits and gestational diabetes. Diabetologia Doswiadczalna i Kliniczna, 2010, 10: 17-22	Independent variable, health status
290	Soto, R., Guilloty, N., Anzalota, L. et al. Association between maternal diet factors and hemoglobin levels, glucose tolerance, blood pressure and gestational age in a Hispanic population. Arch Latinoam Nutr, 2015, 65: 86-96. PMID:26817380.	Independent variable
291	Souza, Lalitha, Jayaweera, Hiranthi, Pickett, Kate E. Pregnancy diets, migration, and birth outcomes. Health Care Women Int, 2016, 37: 964-978	Study design
292	Sparks, J. W. Fetal growth and diet. Mead Johnson Symp Perinat Dev Med, 1984, : 21-7. PMID:6545381.	Study design
293	Standards of care of diabetes mellitus in pregnancy. Diabetologie Metabolismus Endokrinologie Vyziva, 2007, 10: 229-231	Study design, language
294	Steegers, E. A., Van Lakwijk, H. P., Jongsma, H. W. et al. (Patho)physiological implications of chronic dietary sodium restriction during pregnancy; a longitudinal prospective randomized study. Br J Obstet Gynaecol, 1991, 98: 980-7. PMID:1751444.	Independent variable
295	Steegers, E. A. P., Van Lakwijk, H. P. J. M., Jongsma, H. W. et al. (Patho)physiological implications of chronic dietary sodium restriction during pregnancy; a longitudinal prospective randomzied study. Br J Obstet Gynaecol, 1991, 98: 980-987	Duplicate
296	Steegers, Eap, Buul, Eja. Chronic dietary sodium restriction in the prevention of hypertension during pregnancy: preliminary results of a Dutch multicentered trial. 9th International Congress of the International Society for the Study of Hypertension in Pregnancy; 1994 March 15-18; Sydney, A, 1994,	Not peer-reviewed
297	Stein, A. Adressing disturbances in the relationship between mothers with eating disorders and their infants: a randomized controlled trial. Personal communication, 2004,	Independent variable, not peer reviewed

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298	Stein, A. The influence of maternal eating disorder on infant development: an intervention study. ControlledTrials.com [http://www.controlled-trials.com/ISRCTN95026274], 2004,	Independent variable, not peer reviewed
299	Stephens, T. V., Woo, H., Innis, S. M. et al. Healthy pregnant women in Canada are consuming more dietary protein at 16- and 36-week gestation than currently recommended by the Dietary Reference Intakes, primarily from dairy food sources. Nutr Res, 2014, 34: 569-76. PMID:25150115.	Independent variable
300	Stuckey-Schrock, K., Schrock, S. D. Head off complications in late preterm infants. J Fam Pract, 2013, 62. PMID:23570036.	Independent variable, study design
301	Suhail, M., Suhail, M. F., Khan, H. Role of vitamins C and E in regulating antioxidant and pro-oxidant markers in preeclampsia. Journal of Clinical Biochemistry and Nutrition, 2008, 43: 210-220	Country
302	Svenningsen, Nw, Lindquist, B. Incidence of metabolic acidosis in term, preterm and small for gestational age infants in relation to dietary protein intake. Acta Paediatr Scand, 1973, 62: 1-10	Date
303	Switkowski, K. M., Jacques, P. F., Must, A. et al. Maternal protein intake during pregnancy and linear growth in the offspring. Am J Clin Nutr, 2016, 104: 1128-1136. PMID:27581477.	Independent variable
304	Symonds, M. E., Budge, H., Edwards, L. J. et al. Maternal nutrition, cortisol and programming of fetal development. Perinatology, 2002, 4: 67-74	No full text
305	Tande, D. L., Ralph, J. L., Johnson, L. K. et al. First trimester dietary intake, biochemical measures, and subsequent gestational hypertension among nulliparous women. J Midwifery Womens Health, 2013, 58: 423-30. PMID:23895215.	Independent variable
306	Tanha, F. D., Mohseni, M., Ghajarzadeh, M. et al. The effects of healthy diet in pregnancy. Journal of Family and Reproductive Health, 2013, 7: 121-125	Independent variable, dependent variable
307	Taylor, C. M., Golding, J., Emond, A. M. Blood mercury levels and fish consumption in pregnancy: Risks and benefits for birth outcomes in a prospective observational birth cohort. Int J Hyg Environ Health, 2016, 219: 513-20. PMID:27252152.	Independent variable
308	Thacker, S. M., Petkewicz, K. A. Gestational diabetes mellitus. U.S. Pharm., 2009, 34: 43-48	Study design

	Citation	Rationale
309	Thomas, B., Ghebremeskel, K., Lowy, C. et al. Nutrient intake of women with and without gestational diabetes with a specific focus on fatty acids. Nutrition, 2006, 22: 230-6. PMID:16500549.	Independent variable, study design
310	Thomas, D. M., Clapp, J. F., Shernce, S. A foetal energy balance equation based on maternal exercise and diet. J R Soc Interface, 2008, 5: 449-55. PMID:17895222.	Independent variable
311	Thompson, J. M., Wall, C., Becroft, D. M. et al. Maternal dietary patterns in pregnancy and the association with small-for-gestational-age infants. Br J Nutr, 2010, 103: 1665-73. PMID:20211035.	Study design
312	Tielemans, M. J., Erler, N. S., Leermakers, E. T. M. et al. A Priori and a Posteriori dietary patterns during pregnancy and gestational weight gain: The generation R study. Nutrients, 2015, 7: 9383-9399	Dependent variable
313	Tobias, D. K., Zhang, C., Chavarro, J. et al. Healthful dietary patterns and long-term weight change among women with a history of gestational diabetes mellitus. Int J Obes (Lond), 2016, 40: 1748-1753. PMID:27569683.	Dependent variable
314	Tovar, A., Must, A., Bermudez, O. I. et al. The impact of gestational weight gain and diet on abnormal glucose tolerance during pregnancy in Hispanic women. Matern Child Health J, 2009, 13: 520-30. PMID:18597166.	Independent variable
315	Uusitalo, U., Arkkola, T., Ovaskainen, M. L. et al. Unhealthy dietary patterns are associated with weight gain during pregnancy among Finnish women. Public Health Nutr, 2009, 12: 2392-9. PMID:19323867.	Dependent variable
316	Valentini, R., Dalfra, M. G., Masin, M. et al. A pilot study on dietary approaches in multiethnicity: two methods compared. Int J Endocrinol, 2012, 2012. PMID:22505892.	Health status
317	Van Buul, B. J. A., Steegers, E. A. P., Van Der Maten, G. D. et al. Dietary sodium restriction does not prevent gestational hypertension: A Dutch two-center randomized trial. Hypertension in Pregnancy, 1997, 16: 335-346	Independent variable
318	van Buul, B. J., Steegers, E. A., Jongsma, H. W. et al. Dietary sodium restriction in the prophylaxis of hypertensive disorders of pregnancy: effects on the intake of other nutrients. Am J Clin Nutr, 1995, 62: 49-57. PMID:7598066.	Independent variable
319	van der Maten, G. D. Low sodium diet in pregnancy: effects on maternal nutritional status. Eur J Obstet Gynecol Reprod Biol, 1995, 61: 63-4. PMID:8549849.	Independent variable

	Citation	Rationale
320	van der Maten, G. D., van Raaij, J. M., Visman, L. et al. Low-sodium diet in pregnancy: effects on blood pressure and maternal nutritional status. Br J Nutr, 1997, 77: 703-20. PMID:9175991.	Independent variable
321	Vejrup, K., Brantsaeter, A. L., Knutsen, H. K. et al. Prenatal mercury exposure and infant birth weight in the Norwegian Mother and Child Cohort Study. Public Health Nutr, 2014, 17: 2071-80. PMID:24103413.	Independent variable
322	Vilela, A. A., Pinto Tde, J., Rebelo, F. et al. Association of Prepregnancy Dietary Patterns and Anxiety Symptoms from Midpregnancy to Early Postpartum in a Prospective Cohort of Brazilian Women. J Acad Nutr Diet, 2015, 115: 1626-35. PMID:25769749.	Dependent variable
323	Vitolo, Mr, Fraga, Bueno Ms, Mendes, Gama C. Impact of a dietary counseling program on the gain weight speed of pregnant women attended in a primary care service. Revista Brasileira de Ginecologia e Obstetricia, 2011, 33: 13-19	Language
324	Wakimoto, Patricia, Akabike, Andrea, King, Janet C. Maternal Nutrition and Pregnancy Outcomeâ€”A Look Back. Nutrition Today, 2015, 50: 221-229	Study design, non peer-reviewed
325	Walsh, J. M., Mahony, R. M., Culliton, M. et al. Impact of a low glycemic index diet in pregnancy on markers of maternal and fetal metabolism and inflammation. Reprod Sci, 2014, 21: 1378-81. PMID:24642719.	Dependent variable
326	Walsh, J. M., McGowan, C. A., Mahony, R. et al. Low glycaemic index diet in pregnancy to prevent macrosomia (ROLO study): randomised control trial. Bmj, 2012, 345. PMID:22936795.	Independent variable
327	Wang, C., Zhu, W., Wei, Y. et al. Exercise intervention during pregnancy can be used to manage weight gain and improve pregnancy outcomes in women with gestational diabetes mellitus. BMC Pregnancy Childbirth, 2015, 15. PMID:26459271.	Independent variable
328	Weed, S. S. Preeclampsia. Midwifery Today Int Midwife, 2014, : 22-3. PMID:25980104.	Study design
329	Wen, L. M., Simpson, J. M., Rissel, C. et al. Maternal junk food diet during pregnancy as a predictor of high birthweight: findings from the healthy beginnings trial. Birth, 2013, 40: 46-51. PMID:24635424.	Independent variable
330	Wheeler, S. J., Poston, L., Thomas, J. E. et al. Maternal plasma fatty acid composition and pregnancy outcome in adolescents. Br J Nutr, 2011, 105: 601-10. PMID:21269546.	Independent variable

	Citation	Rationale
331	Widga, A. C., Lewis, N. M. Defined, in-home, prenatal nutrition intervention for low-income women. J Am Diet Assoc, 1999, 99. PMID:10491673.	Independent variable
332	Williams, C., Highley, W., Ma, E. H. et al. Protein, amino acid, and caloric intakes of selected pregnant women. J Am Diet Assoc, 1981, 78: 28-35. PMID:7217557.	Independent variable
333	Williams, E. J. Gestational diabetes mellitus and diet control. Diabetes Educ, 1986, 12: 16-7. PMID:3633805.	Study design
334	Wolff, C. B., Wolff, H. K. Maternal eating patterns and birth weight of Mexican American infants. Nutr Health, 1995, 10: 121-34. PMID:7491165.	Study design
335	Wood,. Diet for diabetics: fact vs. hypothesis. Compr Ther, 1980, 6: 56-61. PMID:7408433.	Study design
336	Wynn, A. H., Crawford, M. A., Doyle, W. et al. Nutrition of women in anticipation of pregnancy. Nutr Health, 1991, 7: 69-88. PMID:2038457.	Independent variable
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